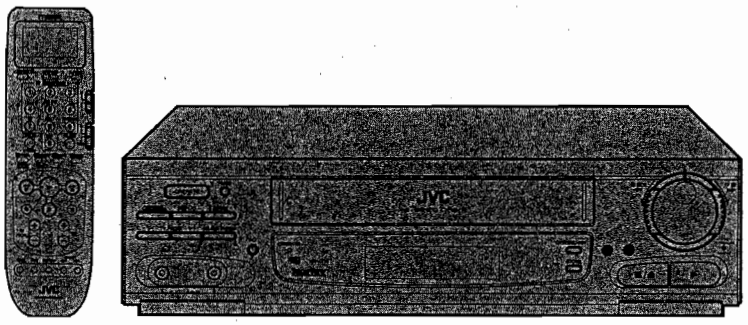
V01087

JVC

SERVICE MANUAL

HR-J315E/EG/J318E



VHS PAL

SHOWVIEW

SPECIFICATIONS *(The specifications shown pertain specifically to the model HR-J318E)*

GENERAL

Power requirement	: AC 220 – 240 V~, 50/60 Hz
Power consumption	: 19 W
Temperature	
Operating	: 5°C to 40°C
Storage	: –20°C to 60°C
Dimensions (WxHxD)	: 360 x 94 x 348 mm
Weight	: 4.4 kg
Format	: VHS PAL standard

VIDEO/AUDIO

Signal system	: PAL-type colour signal and CCIR monochrome signal, 625 lines/50 fields
Recording system	: Rotary, slant azimuth two-head helical scan system
Signal-to-noise ratio	: 43 dB (Rohde & Schwarz noise meter)
Horizontal resolution	: 250 lines (260 lines with SQ activated)
Frequency range	: 70 Hz to 10,000 Hz
Input/Output	: 21-pin scart connector

TUNER/TIMER

TV channel storage capacity	: 80 positions (+AUX position "AU")
Channel coverage	: VHF 47 – 89/104 – 300/ 302 – 470 MHz UHF 470 – 862 MHz
Aerial output	: UHF channel 36

ACCESSORIES

Provided accessories	: Aerial cable, Infrared remote control unit, "R6" battery x 2, AC power cord

Design and specifications subject to change without notice.

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No. 82394
February 1994

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The following table lists the differing points between Models (HR-J315E, HR-J315EG and HR-J318E) in this series.

	HR-J315E	HR-J315EG	HR-J318E
VPS	×	○	×
FRONT INPUT	×	×	○
PDC	×	×	○

○ : USED × : NOT USED

Important Safety Precautions

Prior to shipment from the factory, JVC products are strictly inspected to conform with the recognized product safety and electrical codes of the countries in which they are to be sold. However, in order to maintain such compliance, it is equally important to implement the following precautions when a set is being serviced.

● Precautions during Servicing

1. Locations requiring special caution are denoted by labels and inscriptions on the cabinet, chassis and certain parts of the product. When performing service, be sure to read and comply with these and other cautionary notices appearing in the operation and service manuals.

2. Parts identified by the ⚠ symbol and shaded (▒▒) parts are critical for safety.
   Replace only with specified part numbers.
   Note: Parts in this category also include those specified to comply with X-ray emission standards for products using cathode ray tubes and those specified for compliance with various regulations regarding spurious radiation emission.

3. Fuse replacement caution notice.
   Caution for continued protection against fire hazard.
   Replace only with same type and rated fuse(s) as specified.

4. Use specified internal wiring. Note especially:
   1) Wires covered with PVC tubing
   2) Double insulated wires
   3) High voltage leads

5. Use specified insulating materials for hazardous live parts. Note especially:
   1) Insulation Tape
   2) PVC tubing
   3) Spacers
   4) Insulation sheets for transistors
   5) Barrier

6. When replacing AC primary side components (transformers, power cords, noise blocking capacitors, etc.) wrap ends of wires securely about the terminals before soldering.

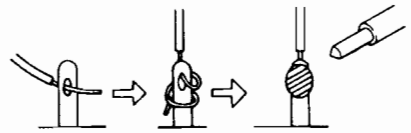


Fig. 1

7. Observe that wires do not contact heat producing parts (heat-sinks, oxide metal film resistors, fusible resistors, etc.)

8. Check that replaced wires do not contact sharp edged or pointed parts.

9. When a power cord has been replaced, check that 10–15 kg of force in any direction will not loosen it.

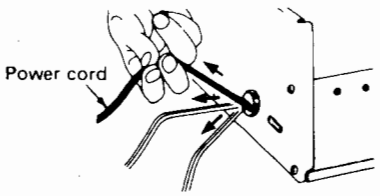


Fig. 2

10. Also check areas surrounding repaired locations.

11. Products using cathode ray tubes (CRTs)
    In regard to such products, the cathode ray tubes themselves, the high voltage circuits, and related circuits are specified for compliance with recognized codes pertaining to X-ray emission. Consequently, when servicing these products, replace the cathode ray tubes and other parts with only the specified parts. Under no circumstances attempt to modify these circuits. Unauthorized modification can increase the high voltage value and cause X-ray emission from the cathode ray tube.

12. Crimp type wire connector
    In such cases as when replacing the power transformer in sets where the connections between the power cord and power transformer primary lead wires are performed using crimp type connectors, if replacing the connectors is unavoidable, in order to prevent safety hazards, perform carefully and precisely according to the following steps.

    1) **Connector part number** : E03830-001
    2) **Required tool** : Connector crimping tool of the proper type which will not damage insulated parts.
    3) **Replacement procedure**
       (1) Remove the old connector by cutting the wires at a point close to the connector.
       Important : Do not reuse a connector (discard it).

Fig. 3

(2) Strip about 15 mm of the insulation from the ends of the wires. If the wires are stranded, twist the strands to avoid frayed conductors.

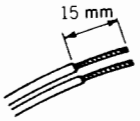


Fig. 4

(3) Align the lengths of the wires to be connected. Insert the wires fully into the connector.

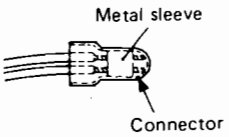


Fig. 5

(4) As shown in Fig. 6, use the crimping tool to crimp the metal sleeve at the center position. Be sure to crimp fully to the complete closure of the tool.

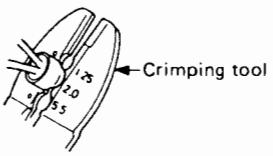


Fig. 6

(5) Check the four points noted in Fig. 7.

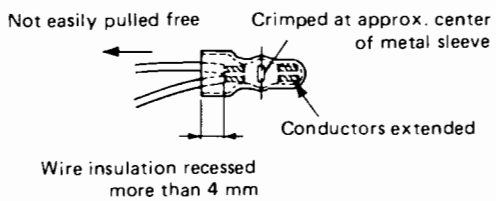


Fig. 7

● Safety Check after Servicing

Examine the area surrounding the repaired location for damage or deterioration. Observe that screws, parts and wires have been returned to original positions, Afterwards, perform the following tests and confirm the specified values in order to verify compliance with safety standards.

1. Insulation resistance test

Confirm the specified insulation resistance or greater between power cord plug prongs and externally exposed parts of the set (RF terminals, antenna terminals, video and audio input and output terminals, microphone jacks, earphone jacks, etc.). See table 1 below.

2. Dielectric strength test

Confirm specified dielectric strength or greater between power cord plug prongs and exposed accessible parts of the set (RF terminals, antenna terminals, video and audio input and output terminals, microphone jacks, earphone jacks, etc.). See table 1 below.

3. Clearance distance

When replacing primary circuit components, confirm specified clearance distance (d), (d') between soldered terminals, and between terminals and surrounding metallic parts. See table 1 below.

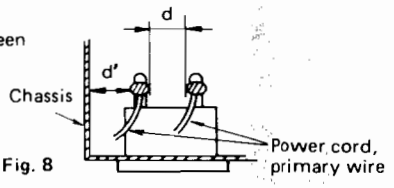


Fig. 8

4. Leakage current test

Confirm specified or lower leakage current between earth ground/power cord plug prongs and externally exposed accessible parts (RF terminals, antenna terminals, video and audio input and output terminals, microphone jacks, earphone jacks, etc.).

Measuring Method: (Power ON)

Insert load Z between earth ground/power cord plug prongs and externally exposed accessible parts. Use an AC voltmeter to measure across both terminals of load Z. See figure 9 and following table 2.

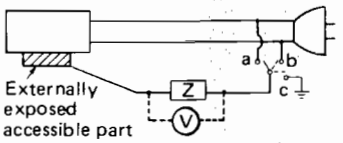


Fig. 9

5. Grounding (Class I model only)

Confirm specified or lower grounding impedance between earth pin in AC inlet and externally exposed accessible parts (Video in, Video out, Audio in, Audio out or Fixing screw etc.).

Measuring Method:

Connect milli ohm meter between earth pin in AC inlet and exposed accessible parts. See figure 10 and grounding specifications.

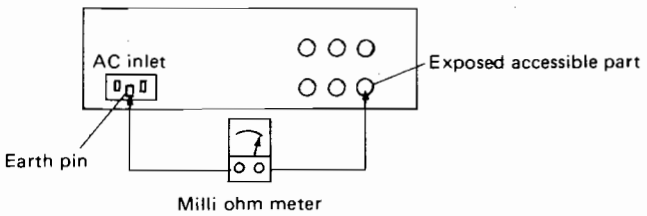


Fig. 10

Grounding Specifications

Region	Grounding Impedance (Z)
USA & Canada	Z ≦ 0.1 ohm
Europe & Australia	Z ≦ 0.5 ohm

AC Line Voltage	Region	Insulation Resistance (R)	Dielectric Strength	Clearance Distance (d), (d')
100 V	Japan	R ≧ 1 MΩ/500 V DC	AC 1 kV 1 minute	d, d' ≧ 3 mm
100 to 240 V			AC 1.5 kV 1 minute	d, d' ≧ 4 mm
110 to 130 V	USA & Canada	–	AC 1 kV 1 minute	d, d' ≧ 3.2 mm
110 to 130 V 200 to 240 V	Europe & Australia	R ≧ 10 MΩ /500 V DC	AC 3 kV 1 minute (Class II) AC 1.5 kV 1 minute (Class I)	d ≧ 4 mm d' ≧ 8 mm (Power cord) d' ≧ 6 mm (Primary wire)

Table 1 Specifications for each region

AC Line Voltage	Region	Load Z	Leakage Current (i)	a, b, c
100 V	Japan	1 kΩ	i ≦ 1 mA rms	Exposed accessible parts
110 to 130 V	USA & Canada	0.15 μF, 1.5 kΩ	i ≦ 0.5 mA rms	Exposed accessible parts
110 to 130 V 220 to 240 V	Europe & Australia	2 kΩ	i ≦ 0.7 mA peak i ≦ 2 mA dc	Antenna earth terminals
		50 kΩ	i ≦ 0.7 mA peak i ≦ 2 mA dc	Other terminals

Table 2 Leakage current specifications for each region

Note: These tables are unofficial and for reference only. Be sure to confirm the precise values for your particular country and locality.

INSTRUCTIONS

Safety Precautions

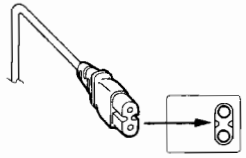
The rating plate and the safety caution are on the rear of the unit.

WARNING: DANGEROUS VOLTAGE INSIDE
WARNING: TO PREVENT FIRE OR SHOCK HAZARD, DO NOT EXPOSE THIS UNIT TO RAIN OR MOISTURE.

The OPERATE button does not completely shut off mains power from the unit, but switches operating current on and off.

This unit is produced to comply with Directives 76/889/EEC, 82/499/EEC, 87/308/EEC and Standard IEC Publ. 65.

CAUTION



- To avoid electric shock or damage to the unit, first firmly insert the small end of the AC power cord into the recorder until it is no longer wobbly, and then plug the larger end of the AC power cord into an AC outlet.
- When you are not using the recorder for a long period of time, it is recommended that you disconnect the power cord from the AC outlet.
- Dangerous voltage inside. Refer internal servicing to qualified service personnel. To prevent electric shock or fire hazard, remove the power cord from the AC outlet prior to connecting or disconnecting any signal lead or aerial.

WARNING
There are two different types of SECAM colour systems: SECAM-L, used in FRANCE (also called SECAM-West), and SECAM-B, used in Eastern European countries (also called SECAM-East).

1. This recorder can also receive SECAM-B colour television signals for recording and playback.
2. Recordings made of SECAM-B television signals produce monochrome pictures if played back on a video recorder of SECAM-L standard, or do not produce normal colour pictures if played back on a PAL video recorder with SECAM-B system incorporated (even if the TV set is SECAM-compatible).
3. SECAM-L prerecorded cassettes or recordings made with a SECAM-L video recorder produce monochrome pictures when played back with this recorder.
4. This recorder cannot be used for the SECAM-L standard. Use a SECAM-L recorder to record SECAM-L signals.

IMPORTANT:
- It may be unlawful to record or play back copyrighted material without the consent of the copyright owner.
- Please read the "Precautions" section of this instruction manual before installing or operating the recorder.

VHS HQ ShowView

- Only cassettes marked "VHS" can be used with this video recorder.
- HQ VHS is compatible with existing VHS equipment.
- ShowView is a trademark applied for by Gemstar Development Corp. ShowView system is manufactured under license from Gemstar Development Corporation.
- SQ is a technology owned by NOKIA.

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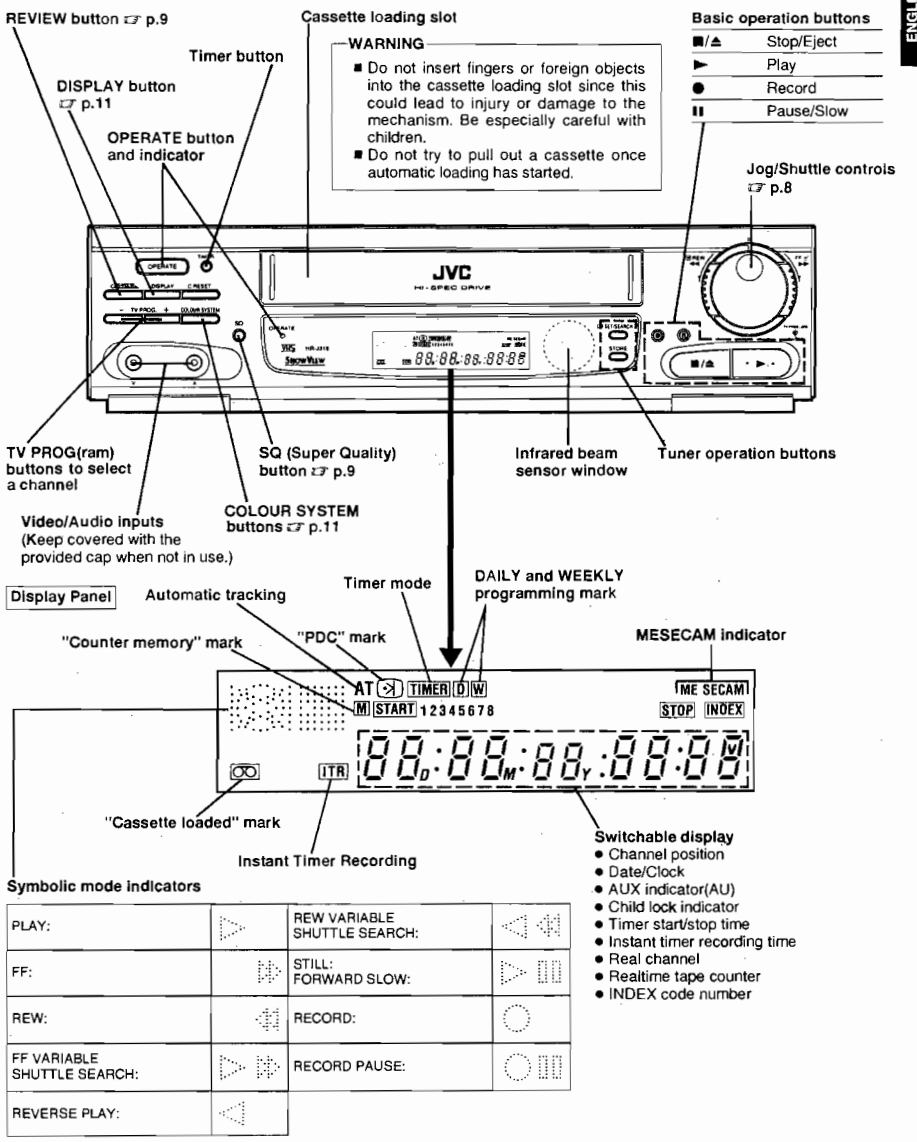
Controls And Indicators

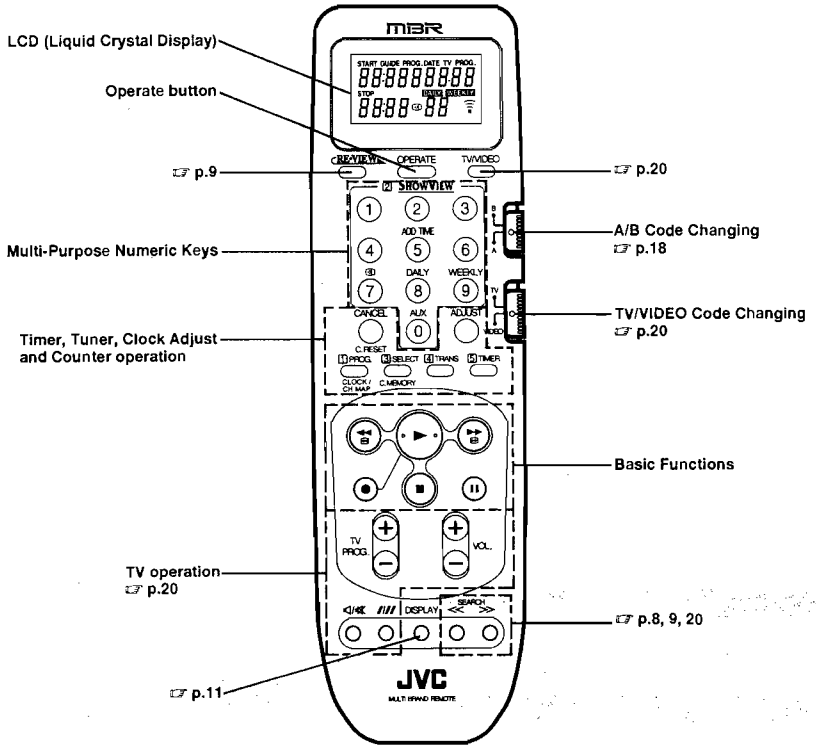
ENGLISH

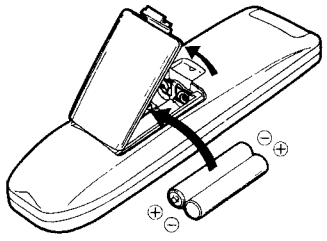
Front Panel



Controls And Indicators (cont'd)

Wireless Remote Control





Installing Batteries

1. Open the battery compartment cover.
2. Insert 2 "R6"-size batteries (provided) in the correct directions.
3. Replace the cover.

How To Use

The remote control can operate most of your video recorder's functions, as well as basic functions of TV sets of JVC and other brands. ☞ p. 20.

- Point the remote control toward the sensor window.
- The maximum operating distance of the remote control is about 8 m.

Connections

It's essential that your video recorder be properly connected. Follow these steps carefully. THESE STEPS MUST BE COMPLETED BEFORE ANY VIDEO OPERATION CAN BE PERFORMED.

A RECORDER-TO-TV CONNECTION

RF CONNECTION

For TV sets without AV input terminals:

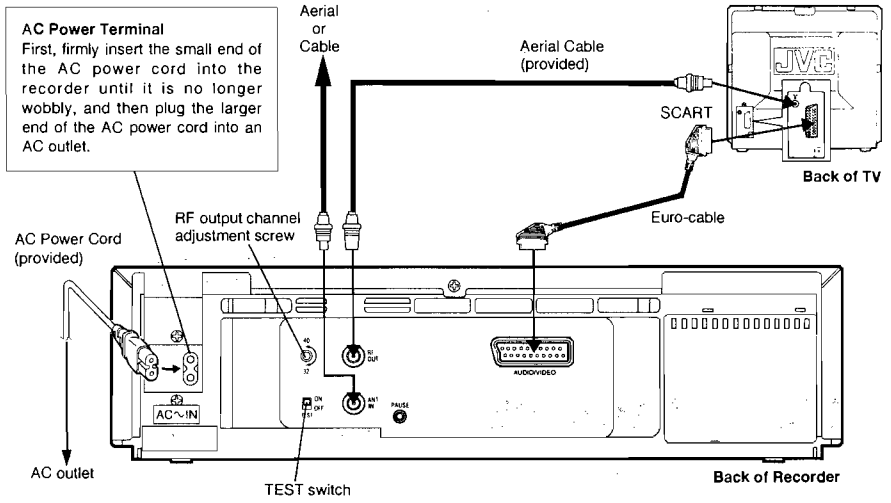
1. Connect the TV aerial cable to the recorder.
2. Connect the recorder to the TV's aerial terminal.

AV CONNECTION

For TV sets with AV input terminals:

1. Connect the aerial, recorder and TV as per "RF CONNECTION".
2. Connect the recorder to the TV's 21-pin SCART connector.

AC Power Terminal
First, firmly insert the small end of the AC power cord into the recorder until it is no longer wobbly, and then plug the larger end of the AC power cord into an AC outlet.

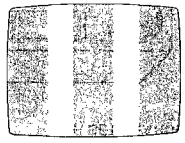


B ADJUST VIDEO CHANNEL (UHF 36)

With an RF connection, the video recorder sends picture and sound signals through the connecting cable to your TV on UHF channel 36.

TEST SIGNAL

1. Turn on the recorder.
2. Set the TEST switch to ON.
3. Set your TV to the video channel. Tune to the real channel 36, to bring the two vertical white bars on the screen most clearly.

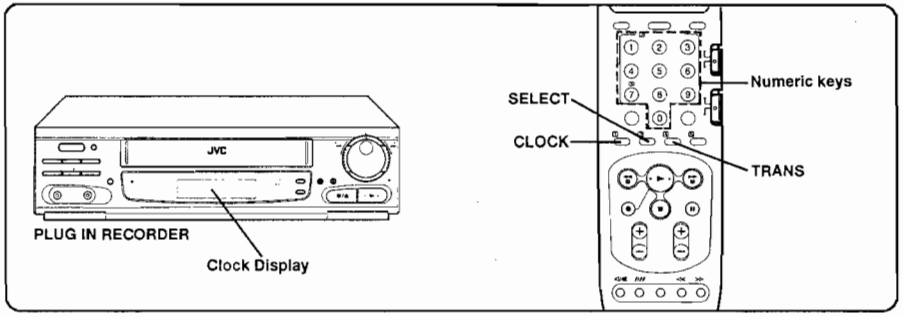


4. Your TV should be set to the channel designated for use with a video recoder or to a spare channel if there is not a specified channel.
5. Reset the TEST switch to OFF.

NOTE:
If some interference noise is seen on the screen because of broadcasts on neighbouring channels, it is necessary to shift the video channel from UHF channel 36. This is possible for UHF channels 32 through 40. Consult your JVC dealer for making this adjustment.

IMPORTANT:
To operate the recorder with your TV using an RF connection, it is always necessary to set your TV's channel to VIDEO CHANNEL. With an AV connection, set the TV to the VIDEO (or AV) mode.

Setting The Clock

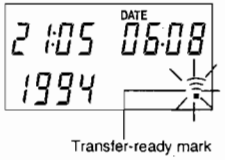


1. **Load batteries** (☞ p.4).

2. **Press CLOCK.**

3. **Press the appropriate numeric keys to input the time.**
   - Example: For 21:05, press 2 1 0 5.

4. **Press the appropriate numeric keys to input the day, month and year.**
   - Example: For 6th August, 1994, press 0 6 0 8 1 9 9 4.



5. **Press TRANS with the remote control directed to the recorder's remote sensor window.**
   - The remote control's clock will start. At the same time, the set data will be transferred to the recorder.

TO MAKE CORRECTIONS

Press SELECT button so that the item you want to change blinks. Re-input that item. Continue to step 5.

AFTER A POWER CUT

Since your video recorder has a 3-minute backup memory, it will not be affected by short power cuts. If mains power is unavailable for over 3 minutes, however, the recorder's display will reset to 0:00. In such a case, simply transfer the remote control's time to the recorder.

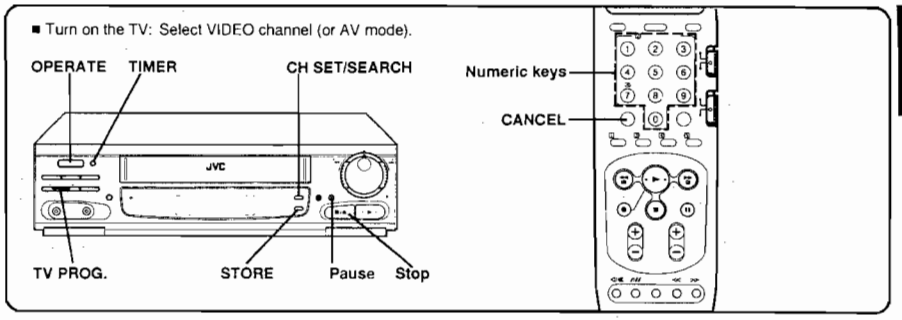
1. Press CLOCK three times.
2. Press TRANS with the remote control directed to the recorder's remote sensor window.

NOTES:

- If the day and month data is invalid (such as 31st April), the month digits are cleared automatically and the day digits will blink. Input again.
- If the year digits are automatically cleared in step 4, it is possible that you have input 29th February for a non-leap year. Input again.
- When the batteries are exhausted, the time display will change to "0:00" and start blinking. Replace all the batteries and set the clock again.

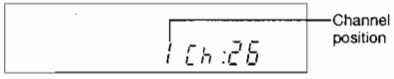
Setting The Tuner

- Turn on the TV: Select VIDEO channel (or AV mode).



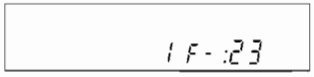
The procedure introduced here lets you assign receivable channels in your area to channel positions on your video recorder's tuner. Once stored, these can be accessed with the TV PROG. buttons.

1. **Press OPERATE to turn on the recorder.**
2. **Press CH SET/SEARCH until the display panel shows the following.**

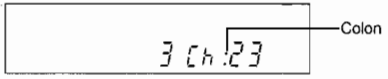


Ch = Regular CC = Cable

3. **Press CH SET/SEARCH again briefly to start automatic scanning for receivable channels.**
   - Automatic scanning stops when a station is detected, and the channel position will blink.
   - Holding down CH SET/SEARCH will start reverse search.
   - If you don't want to store the station detected, simply press CH SET/SEARCH to continue automatic scanning.
4. **Press Pause to fine-tune the channel, if necessary.**
   - When the picture is clear, proceed to step 7.
5. **Press TV PROG. +/– so that the picture becomes clear.**



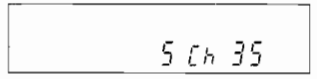
6. **Press Pause.**
7. **Press numeric keys or TV PROG. to select the channel position where you wish to store that TV station.**



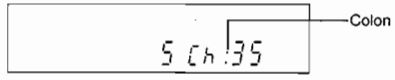
8. **Press STORE to store the station.**
   - The colon will disappear when the station is stored.
9. **Repeat steps 3 through 8 for other receivable channels.**
10. **Press Stop on the recorder to disengage the Channel Set mode.**

TO DELETE STORED CHANNELS

1. Press TV PROG. to select the channel position you want to skip.
2. Press CH SET/SEARCH for more than 2 seconds.



3. Press CANCEL.

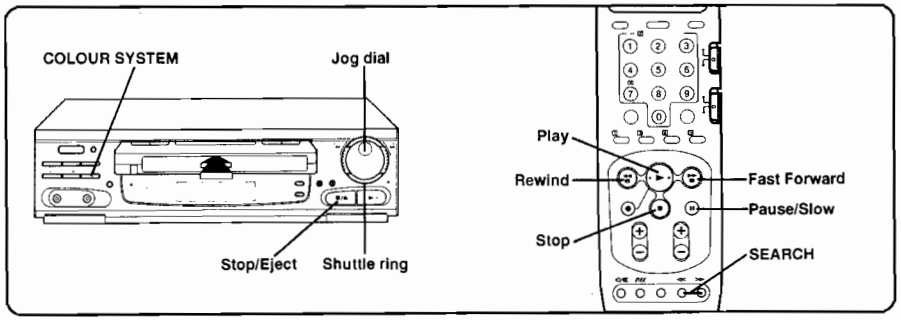


   - The colon will appear when the station is deleted. Channel position 5 can no longer be chosen by TV PROG. buttons.
4. Press Stop on the recorder to disengage the Channel Set mode.

TO STORE NEW CHANNELS

1. Press CH SET/SEARCH for more than 2 seconds.
2. Press TIMER.
   - Real channel starts blinking.
3. Press TIMER to change the band between Ch and CC, if necessary.
4. Press numeric keys to input the number of the real channel you want to store.
5. Press numeric keys to input the number of a vacant channel position.
6. Press STORE to store the channel.
7. Press Stop on the recorder to disengage the Channel Set mode.

Playback



Basic Operations

Preparation

- Turn on the TV.
- Select VIDEO channel (or AV mode).

1. **Load a cassette.**
   - The recorder power will come on automatically.
   - The counter will be reset to "0:00:00" automatically.
   - If the safety tab on the cassette is removed, playback will start automatically.
   - Select the appropriate colour system by pressing the COLOUR SYSTEM button.(☞ p. 11)
2. **Press Play to start playback.**
3. **Press Stop to stop playback.**
   - To rewind the tape, press Rewind or turn the shuttle to the left and release it.
   - To fast-forward the tape, press Fast Forward or turn the shuttle to the right and release it.
   - To stop rewind or fast-forward, press Stop.
4. **Press Stop/Eject on the recorder to eject the tape.**

Variable-Speed/High-Speed Search, Still Playback/Frame Advance/Forward Slow Motion

During Playback or Still:
- Press either SEARCH button for variable-speed search.
- The more times the button is pressed, the faster the playback picture will move.
- To decrease speed, press the button for the opposite direction.

During Playback:
- Press Fast Forward for high-speed forward search, or Rewind for high-speed reverse search.
- For short searches, keep Fast Forward or Rewind pressed for more than 2 seconds. When released, normal playback will continue.
- Press Pause/Slow to view a still picture.
- Press again to advance the picture frame by frame.
- Press Pause/Slow for 2 seconds for slow motion.

Other Functions

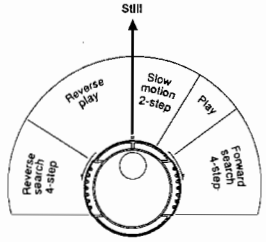
Jog/Shuttle Control

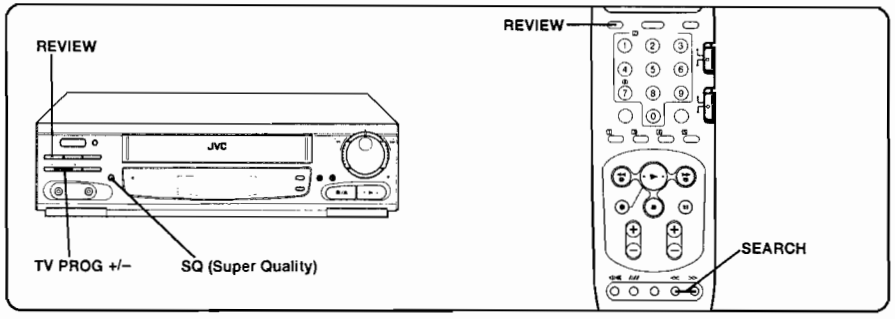
You can view pictures in slow to fast motion, or frame-by-frame.

During Playback or Still:
1. Turn the outer ring (SHUTTLE) in either direction. The farther the ring is rotated, the faster the search speed. Releasing the ring stops the picture in the Still mode.
   - For fast-forward with a visible picture, turn the Shuttle all the way to the right and release it within 1 second.
   - For rewind with a visible picture, turn the Shuttle all the way to the left and release it within 1 second.
   - Slow motion is not possible in the reverse direction.

During Playback or Still:
1. Turn the inner dial (JOG) clockwise for jog control. The tape moves forward frame-by-frame at the speed with which the dial is turned.
   - Frame-by-frame playback is not possible in the reverse direction.
   - By rotating the Jog dial counterclockwise at 2 revolutions per second or faster, reverse play is possible.

To resume normal playback, press Play button.





ENGLISH

S.Q. (Super Quality) Button

Your video recorder is equipped with a special picture circuit that provides a clearer picture with higher-resolution.
Whenever you plug in your recorder and press the OPERATE button, the SQ function turns on also. If you wish to cancel SQ, press SQ so that its light goes off. Pressing SQ turns the function on/off.

NOTES:
- Normally, it is recommended that you keep SQ turned on.
- This button has effect only on playback picture; no effect on recording picture.

Manual Tracking

Your video recorder is equipped with automatic tracking control. If you wish to adjust tracking manually, you can override this function.

During Playback:
1. Press the recorder's TV PROG. + and – buttons simultaneously.
2. Press TV PROG. + or – to adjust tracking.
   - Press TV PROG. + and – simultaneously to return to automatic tracking.

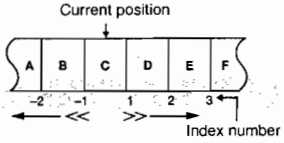
During Slow:
1.Simply press TV PROG.+ or – to adjust tracking.

NOTES:
- The recorder automatically stops when still continues for more than 5 minutes.
- If the still picture is unstable, use the TV PROG. buttons to correct the picture.
- During search playback, some noise bars will appear.
- There is no audio during search, slow, still, or frame-by-frame playback.
- When a new tape is inserted, the recorder enters the automatic tracking mode automatically.

Index Search

Your recorder automatically marks index codes at the beginning of each recording. This function gives you quick access to any one of 9 index codes in either direction.

During Stop:
1. Press SEARCH << or >>. "INDEX –1" or "INDEX 1" will be displayed on the display panel and search will begin in the corresponding direction.
2. If you wish to access index codes 2 through 9, press SEARCH repeatedly until the correct index number is displayed.
   Ex.: To locate the beginning of B from the current position, press SEARCH << twice.
   To locate the beginning of D from the current position, press SEARCH >> once



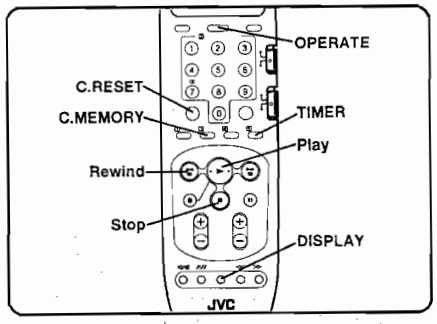
- When the specified index code is found, playback will start automatically

ReView Function

Simply by pressing a single button, the recorder power comes on, rewinds, and begins playback of the last recording. This makes it easier to "review" the programme you have timer-recorded.

When the recorder power is off:
Press REVIEW.
- After the recorder power comes on, the tape will be rewound to the beginning of the last recording (where the index code is placed) and playback will start automatically.
- To play back a recording located 2 index codes away, press REVIEW twice. You can access any one of up to 9 index codes.
- ReView is not possible while the recorder is in the Timer mode.

Playback (cont'd)



Other Functions (cont'd)

Repeat Playback

During Playback:

1. Press Play for more than 5 seconds, and release.
   - The Play indicator (▷) on the display panel will blink slowly.
   - The tape will be played all the way to the end 20 times automatically, and then stop.
2. To stop playback at any time, press Stop.

Counter Memory

During Playback:

1. Press DISPLAY until a counter reading appears on the display panel.
2. Press C.RESET at a point you wish to locate later.
   - The counter will read "0:00:00".
3. Press C.MEMORY.
   - The M indicator will light on the display panel.
4. When you wish to return to that point, press Stop and then Rewind.
   - The tape will rewind and stop at about "0:00:00" automatically.
5. To cancel the Counter Memory mode, press C.MEMORY again.

Next Function Memory

Your recorder can memorise what to do after rewind.

During Stop:

For automatic start of playback after the tape is rewound:

1. Press Rewind.
2. Press Play within 2 seconds.

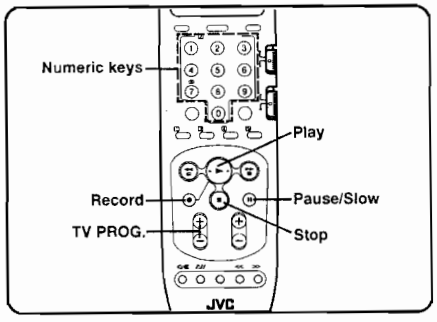
For automatic power off after the tape is rewound:

1. Press Rewind.
2. Press OPERATE within 2 seconds.

For automatic timer standby after the tape is rewound:

1. Press Rewind.
2. Press TIMER within 2 seconds.

Recording



Basic Operations

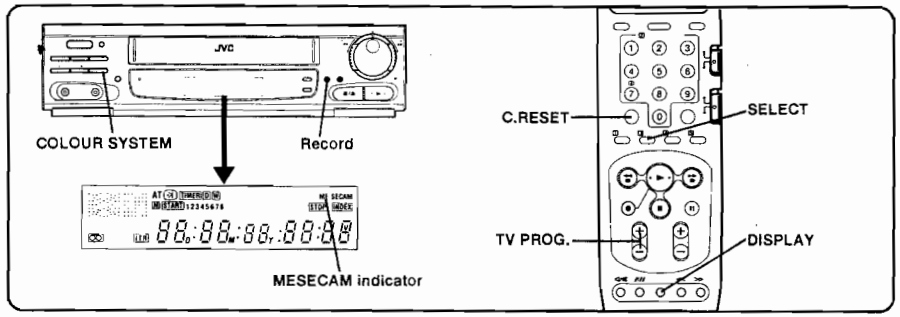
Preparation

- Turn on the TV.
- Select VIDEO channel (or AV mode).

1. **Load a cassette.**
   - The recorder power will come on automatically.
   - Select the appropriate colour system by pressing the COLOUR SYSTEM button.(☞ p.11)
2. **Press TV PROG. or the numeric keys to select the channel you wish to record.**
   - You can also use the recorder's Jog dial to select the channel.
3. **Press Record and Play simultaneously.**
4. **Press Pause/Slow to pause recording.**
5. **Press Play to resume recording.**
6. **Press Stop to stop recording.**

NOTES:

- To start recording with the recorder's Record button, press it once on its own.
- After pause, when recording is resumed, a few frames recorded before the pause may be overlapped by the new recording. This is meant to reduce picture distortion and is not a malfunction.
- The recorder automatically stops when record-pause continues for more than 5 minutes.
- If the Record button does not work, check to see if the cassette's safety tab has been removed.
- The channel cannot be changed while recording is in progress. To change the channel, engage the record-pause mode, then change the channel.
- The recorder automatically rewinds when the end of the tape is reached during recording.
- When a PDC programme is being broadcast on the selected channel, " ⓟ " mark appears on the display panel. ☞ p. 17 for information on PDC.



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Other Functions

Setting of Colour System button

You can also record SECAM signals, or play back a MESECAM tape on this recorder.

- Press COLOUR SYSTEM so that the MESECAM indicator appears on the display panel.
- When recording PAL signals or playing back a PAL tape, press COLOUR SYSTEM again until the MESECAM indicator disappear.

To Watch Another Programme While Recording

During Record:

1. Use the channel controls on the TV to select the other channel you wish to view.
   - The programme selected with the TV's channel controls will appear on the TV screen while the one selected with the video recorder's channel controls will be recorded on the tape.

Instant Timer Recording (Off Timer)

You can start a recording and then set the recorder to shut off automatically after a set duration.

During Record:

1. Press Record on the recorder. "ITR" and "0:30" indications appear, advising that power will switch off after 30 minutes.
2. Press Record again to delay the off-time by 30-minute increments (up to 4 hours).
   - For more precise setting, use the remote control's SELECT and TV PROG. buttons to set the exact time required (possible up to 4 hours and 59 minutes).

Elapsed Recording Time Indication

When you need to know the exact time of a recording.

1. Press DISPLAY until a counter reading appears on the display panel.
2. Press C.RESET before starting recording or playback.
   - The counter will be reset to "0:00:00" and show the exact elapsed time as the tape runs.

Display Button

When you wish to check the time, date, or counter reading

1. Press DISPLAY to display the current clock time.
2. Press DISPLAY again to display the current date.
3. Press DISPLAY again to display the counter reading.

Preparation for ShowView Timer Programming

What is ShowView?

For timer-recording to take place, information such as the channel, date, start time and stop time of the programme you wish to record, must be programmed into the recorder's timer memory. The ShowView system condenses all this information into a simple ShowView code number 4 to 9 digits long.

Since the ShowView number contains information on the channel number, if you live in an area that uses channel numbers that are different from those listed in your TV directory, these "differences" must be input into the remote control. This process is called "Channel Mapping" (CH MAP).

CHECK THE GUIDE PROG. NUMBERS

Preparation

- Make sure you have set the clock. (☞ p. 6)
- Make sure you have set the tuner. (☞ p. 7)
- Get a TV schedule listing (magazine, newspaper, etc.) which carries ShowView code numbers.

A Find out the channel position numbers your recorder tunes to when you use the TV PROG. –/+ buttons (the positions you stored on page 7) and write them into the list.

Example: 1, 2, 3, 4, 6, 8, 10, 12

B Look through the TV listing and find out the broadcast station name of each of the channels.

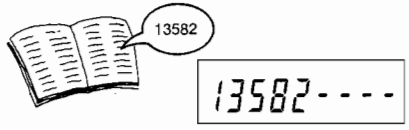
C Use the ShowView numbers to find out the GUIDE PROG. numbers for each of the stations.

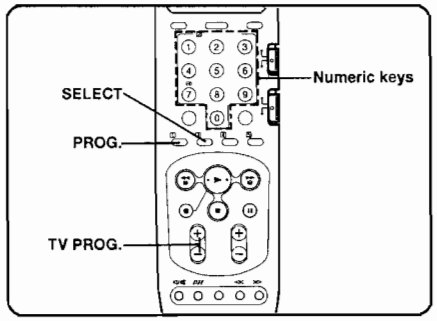
How to check:

1. **Press PROG.**

2. Press the appropriate numeric keys to enter the ShowView number for a programme as it appears in your TV listing.

- Make sure the ShowView number is for a programme which has not been broadcast yet.





3. Press SELECT.

- The number that appears as the channel number is the GUIDE PROG. number for that station. Write it into the list.

ATTENTION

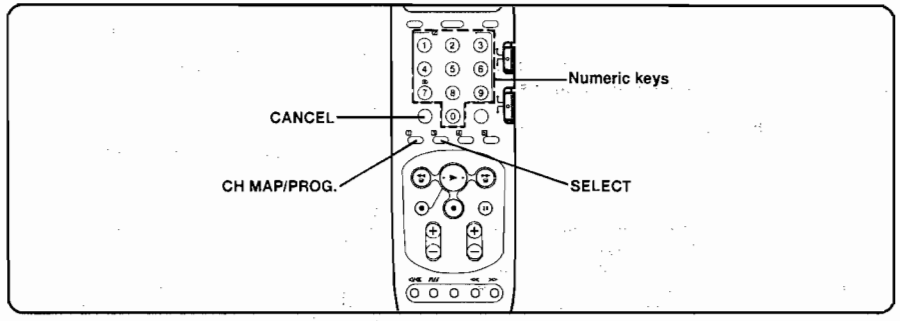
- When you press the SELECT button in step 3, "Err(or)" may appear on the LCD.
  This may mean that...
  - you entered a ShowView number for a programme which has already passed.
  - the GUIDE PROG. number for that station is a 3-digit number.
- For 3-digit GUIDE PROG. numbers, refer to your TV listing or consult your JVC dealer.

4. Press PROG. and display the clock time.

- Repeat steps 1– 4 and check the GUIDE PROG. number for each of the channels your recorder receives.

A Channel on your recorder (TV PROG. number)	B Station name	C GUIDE PROG. number
(ex.) 1	ARD	1
2	ZDF	2
3	WDR	17

D In cases where the channel number your recorder receives A and the GUIDE PROG. number C for that station do not match, it is necessary to make changes in the remote control's Channel Map. (continued on next page)



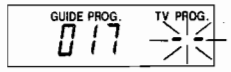
ENGLISH

INPUT GUIDE PROG NUMBERS INTO REMOTE

1. Press CH MAP until the Channel Map display (below) appears in the remote control's LCD.

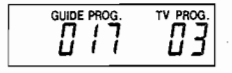
2. Press the appropriate numeric keys to enter the GUIDE PROG. number (C column in your list).

Ex.: For "1", press
0, 0, 1.
For "10", press
0, 1, 0.



3. Press the appropriate numeric keys to enter the channel number your recorder receives that station on. (TV PROG. number, A column in your list.)

Ex.: For "3", press
0, 3.

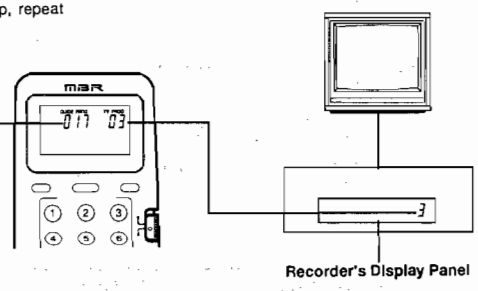


4. Press SELECT.

- To input other channels into the Channel Map, repeat steps 2 – 4 above.

5. Press CH MAP and display the clock time.

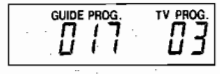
Ex.: From column C in the list: The GUIDE PROG. number for WDR is "17".
From column A in the list: The TV PROG. number for WDR is "3".



TO CHECK/CANCEL GUIDE PROG NUMBERS IN THE REMOTE

1. Press CH MAP until the Channel Map display (below) appears in the remote control's LCD.

2. Press SELECT until the GUIDE PROG. number you wish to check or cancel is displayed.



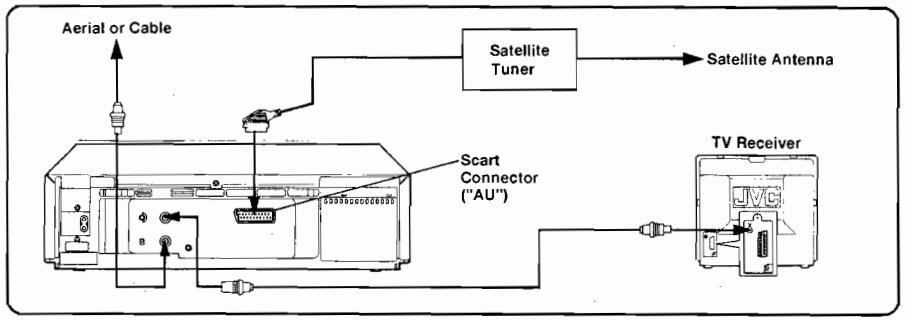
To Cancel:

3. Press CANCEL.
4. Press PROG. and display the clock time.

NOTES:

- When you move to another area, be sure to make changes in the Channel Map as necessary.
- When the remote control's batteries are replaced, the time or Guide Channel numbers you have set may be erased. If this happens, reset them again.

Preparation for ShowView Timer Programming (cont'd)

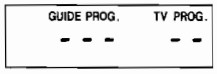


TO RECORD SATELLITE PROGRAMMES

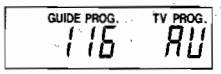
Timer programming is also possible for programmes received via satellite tuner.

Preparation

1. **Connect the satellite tuner as illustrated to the "AU" (Scart) connector.**
2. **Press CH MAP until the Channel Map display (below) appears in the remote control's LCD.**



3. **Press the appropriate numeric keys to enter the GUIDE PROG. and TV PROG. numbers as follows:**
   - For GUIDE PROG., enter the GUIDE PROG. numbers of the satellite stations that are receivable through your satellite tuner.
   - For TV PROG., always enter "00". When "00" is entered, "AU" will appear in the LCD.



4. **Press SELECT.**
   - To input other satellite stations into the Channel Map, repeat steps 3 – 4 above.
5. **Press CH MAP and display the clock time.**

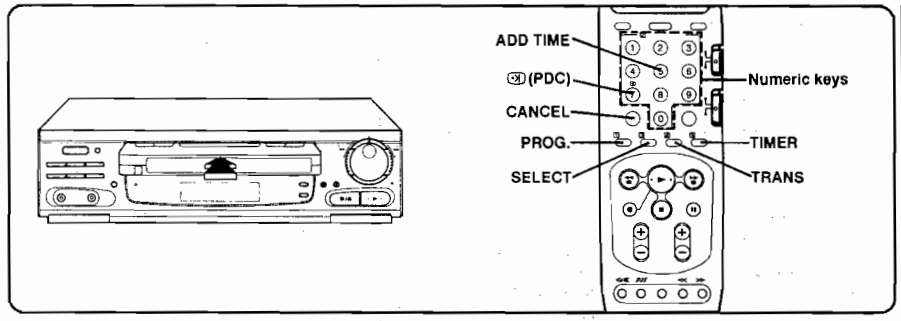
Operation

1. Turn on the satellite tuner and select the channel you wish to record.
2. Enter the ShowView number in the same way as shown in steps 1 – 6 of ShowView Timer Programming on p.15.

NOTE:

- After selecting the programme you wish to record from your satellite tuner, set the system's timer. If your satellite tuner does not have a timer, leave it switched on.

Timer-Recording — ShowView Timer Programming —



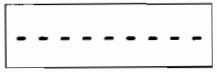
The built-in ShowView programming system greatly simplifies timer programming because you won't have to enter all the data that is usually necessary (such as date, start and stop time, and channel).

TIMER PROGRAMMING IS NOT POSSIBLE UNLESS THE CLOCK HAS BEEN SET.

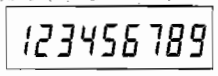
Preparation

- Make sure you have set the GUIDE PROG. numbers (☞ p.12 or 14).
- Insert a cassette with the safety tab in place. The recorder power will come on automatically.
- Select the appropriate colour system by pressing the COLOUR SYSTEM button. (☞ p.11)

1. **Press PROG.**



2. **Press the appropriate numeric keys to enter the ShowView number for the TV programme you wish to record.**
   - For ShowView numbers, refer to your newspaper or TV directory.



3. **Press SELECT.**
   - The LCD will show the data for the ShowView number you just entered.
   - If the entered Show-View number is not proper, "Err" appears on the LCD. Check the ShowView number again and re-enter it.
   - If you wish to take advantage of PDC recording (☞ p.17), press (PDC) (the numeric key "7") so that " " appears on the LCD.

WEEKLY program: After step 3, press numeric key "9".
DAILY (Mon. – Fri.) program: After step 3, press numeric key "8".

4. **Press TRANS with the remote control directed toward the recorder's Remote Sensor window.**
5. **Press PROG.**
   - The LCD returns to the clock display and the entered data will be automatically cleared.
   - If you need to set another program, repeat steps 1 – 5.
6. **Press TIMER.**
   - The recorder will enter the Timer mode and power will go off.

TO DELAY THE STOP TIME

After you press SELECT in step 3, press the ADD TIME button. Each time the ADD TIME button is pressed, the Stop time is delayed by 5 minutes (5 minutes of recording time is added). You can easily compensate for anticipated programme schedule delays this way.

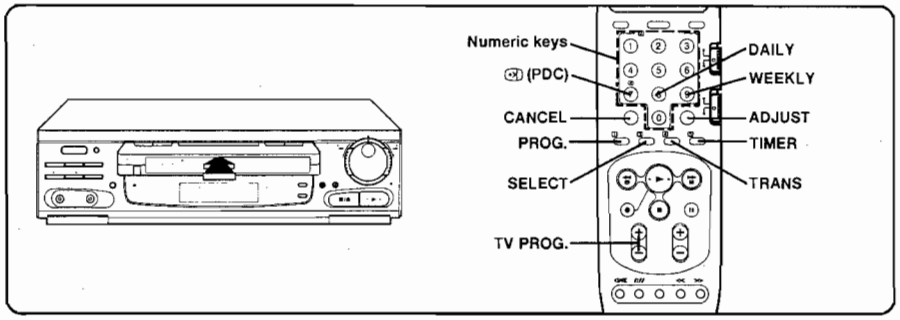
TO MAKE CORRECTIONS

- In step 2, press CANCEL to backspace and re-enter the correct ShowView number.
- After checking the data in step 3, press PROG. twice and re-enter the correct ShowView number.
- After checking the data in step 3, if you want to delay the stop time, etc. press SELECT to make the item you want to change blink, and input new data.
- Pressing PROG. clears the programmed data.

To check, cancel and replace programs, ☞ p.16.

To use the recorder after setting to the Timer mode, ☞ p.16.

Timer-Recording (cont'd) — LCD Timer Programming —



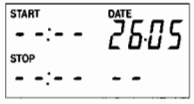
The LCD timer programming lets you input all necessary settings manually. It's helpful if the ShowView number for the TV programme you want isn't readily available.

Preparation

- Insert a cassette with the safety tab in place. The recorder power will come on automatically.
- Select the appropriate colour system by pressing the COLOUR SYSTEM button. (☞ p.11)

1. Press PROG. twice.

2. Press numeric keys to input the date.



Ex.: For 26th May, press 2 6 0 5.

3. Press numeric keys to input the start time, stop time and channel.

Transfer-ready mark

Ex.: For 8:00, press 0 8 0 0.

WEEKLY program: After you input the channel and the transfer-ready mark appears on the LCD, press numeric key "9".

DAILY (Mon. – Fri.) program: After you input the channel and the transfer-ready mark appears on the LCD, press numeric key "8".

- If you wish to take advantage of PDC recording (☞ p.17), press (PDC) (the numeric key "7") so that " (PDC) " appears on the LCD.

4. Press TRANS with the remote control directed to the recorder's Remote Sensor window.

5. Press TIMER.

- The recorder will enter the Timer mode and power will go off.

TO MAKE CORRECTIONS

- During steps 2 and 3, press CANCEL to backspace and input new data.
- After setting the channel in step 3, press SELECT to make the item you want to change blink, and input new data.
- Pressing PROG. clears the programmed data.

TO CHECK, CANCEL AND REPLACE PROGRAMS

To check preset programs:

1. Press ADJUST until the program settings are displayed on the display panel.
   - Program 1 is displayed with the number blinking.
2. Press SELECT to review the program contents in succession.
3. To check another program, press ADJUST again.

To cancel the program:

4. Press CANCEL.
   - You can press CANCEL at any stage while the program is open.

To replace a program:

5. Use the SELECT and TV PROG. buttons to input new data.

TO USE THE RECORDER AFTER SETTING TO THE TIMER MODE

For safety, your recorder disables all other functions while in the Timer mode.

- Press TIMER to disengage the Timer mode.
- To re-engage the Timer mode, press TIMER.

NOTE:

- If you are using a satellite tuner and wish to timer-record satellite programmes, make sure to input "0" for the channel number in step 3 to make "AU" appear.

Other Functions

Error Indications

The following error indications may appear on the recorder when you press the TIMER button to engage the Timer Standby mode. Here's why, and what you should do.

- "TIMER" and "📼" on the display panel continue blinking.
  WHY: There is no cassette in the recorder.
  WHAT TO DO: Insert a cassette.

- The cassette is automatically ejected. "TIMER" and "📼" continue blinking.
  WHY: The inserted cassette has its safety tab removed.
  WHAT TO DO: Insert a cassette with its safety tab intact. Or cover the safety tab hole of the cassette with adhesive tape and re-insert it. ☞ p.21.

- "TIMER" blinks for 10 seconds and the Timer Standby mode is cancelled.
  WHY: There are no preset programs in memory, or they have all been incorrectly preset.
  WHAT TO DO: Check the programmed data and re-program it as necessary. Press TIMER again.

Other Indications

- "TIMER" steady lit (with clock display).
  WHY: The recorder is in the Timer Standby mode. This is the normal display you should see when you press the TIMER button.

- " " and "TIMER" steady lit.
  WHY: Normal display while timer-recording is in progress.

- The cassette was ejected, with power off and "TIMER" and "📼" are blinking.
  WHY: This means that the end of the tape was reached while timer-recording was in progress. Therefore, the preset program may not be recorded in its entirety.

- "0:00" blinking.
  WHY: This means the clock must be set. It's displayed when time-keeping is terminated due to a power failure or because, the recorder's power plug was pulled from the AC outlet.
  WHAT TO DO: Set the clock. ☞ p.6.
  - If power was interrupted, it's also likely that all preset timer programming data has been erased. Please check and re-program as necessary.

- "-- -- -- -- --" is displayed for about 5 seconds when the TRANS button is pressed.
  WHY: Data was not successfully transferred. The program may have been incorrectly preset, or the recorder's clock has not been set, or all the recorder's timer programs (1 – 8) are preset.
  WHAT TO DO: Check the LCD program, and re-program as necessary. Transfer the correct data. Or cancel unnecessary programs, and transfer again.

PDC Recording

ENGLISH

Now available from some TV stations, PDC (Program Delivery Control) is a service designed to assure safe, accurate timer-recording. With this system, special code signals are transmitted together with the audio/video signals. These code signals control your video recorder and have precedence over advertised times you preset in the timer. This means that your recorder will start and stop recording when the preset TV programmes actually start and end — even if the broadcast time of a preset TV programme is changed.

TO USE PDC SERVICE

- During timer programming, press the (PDC) button (the numeric key "7") so that " (PDC) " appears on the display panel.
- During ShowView or LCD timer programming, press the (PDC) button (the numeric key "7") before transferring the programme data to the recorder.
- If you wish to cancel "PDC", press the (PDC) button (the numeric key "7") again. Pressing the (PDC) button alternates the setting.

NOTE:

- When you enter programmes, set the start time exactly as advertised in the TV listing. A different time than advertised will result in no recording.

Locking The Recorder's Controls

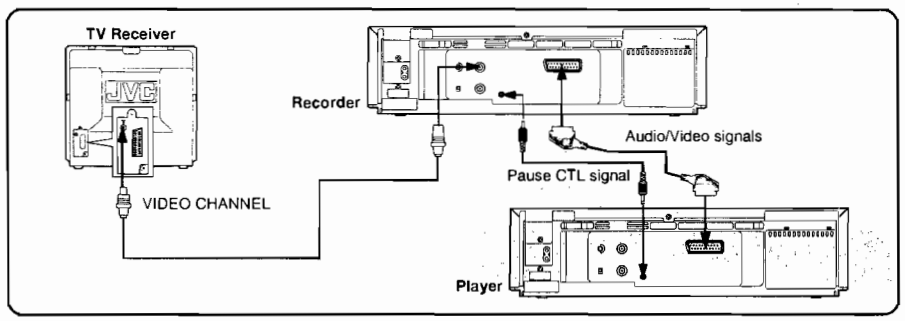
To avoid unwanted operation and prevent accidental recording...

1. Press the remote control's OPERATE button to turn the recorder's power off. Keep this button pressed for about 2 more seconds after the power LED indicator has gone off.
   - The Child Lock indicator (–) will appear on the display panel.
2. Child Lock is cancelled when you switch the recorder's power on with the remote's OPERATE button.
   - Pressing the TIMER button during timer-recording also cancels the Child Lock mode.

NOTES:

- While Child Lock is engaged, make sure you keep your remote control in a safe place inaccessible to children.
- Timer-recording is possible in the Child Lock mode. After timer-recording is done, Child Lock remains in effect.

Editing



Editing To/From Another Recorder

Preparation

- Connect the player's AUDIO/VIDEO connector to the recorder's AUDIO/VIDEO connector.
- Press your recorder's COLOUR SYSTEM button to select the appropriate colour system. (☞ p.11)

	Player	Recorder
1	Load the source tape.	Load the recording tape.
2		Select the external input mode. ■ With this video recorder, press the numeric key "0". "AU" will appear instead of a channel number.
3		Press and hold down the Pause button while you press the Record button to enter the Record-Pause mode.
4	Play back the source tape to search for a scene to be edited.	
5		Start recording where you want to start editing, with this recorder, by pressing the Play button.
6		To stop editing temporarily, press the Pause button.
↓	Repeat steps 4 through 6 to continue editing.	↓
7	To stop editing, press the Stop button.	

NOTES:

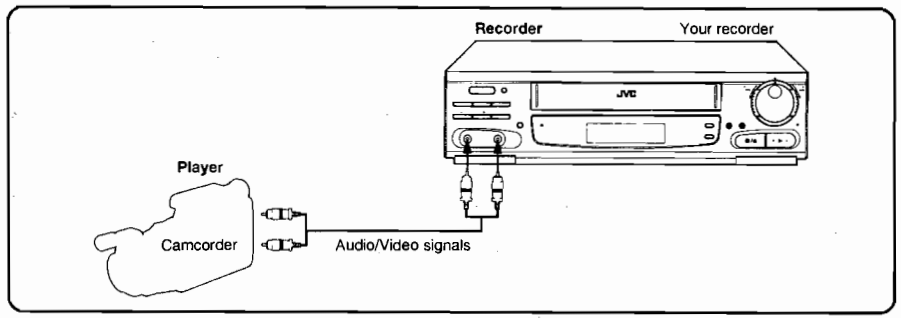
- Your video recorder can be used as either the recording deck or the source player when editing tapes. When used as the source player in combination with another video deck which is preroll-capable and equipped with a Pause Control Output terminal, your recorder's PAUSE terminal can accept preroll commands for synchronized preroll editing.
- While editing, it is recommended that you turn off SQ.(☞ p.9)

Remote A/B Code Switching

The remote control is capable of controlling two JVC video recorders independently; one set to respond to your remote control's A code control signals and another set to respond to B code control signals. The remote control is preset to send A code signals because your video recorder is initially set to respond to A code signals. You can easily modify your video recorder to respond to B code signals.

1. Unplug the recorder's power cord from the AC outlet.
2. Set the A/B code switch to B.
3. Plug the power cord back into the AC outlet. Do not use other remote controls at this stage.
4. Turn the recorder power on using the remote control's OPERATE button. The recorder will now only respond to B code signals.

NOTE:
Some TV sets may malfunction in response to the B mode. If this happens switch back to the A mode.



Editing From A Camcorder

Preparation

- Connect the camcorder's A/V output connectors to the recorder's front panel V (Video) and A (Audio) connector.
- Press your recorder's COLOUR SYSTEM button to select the appropriate colour system (☞ p.11).

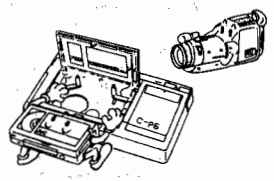
	Player	Recorder
1	Load the source tape.	Load the recording tape.
2		Select the external input mode. ■ With this video recorder, press the numeric key "0". "F-AU" will appear instead of a channel number.
3		Press and hold down the Pause button while you press the Record button to enter the Record-Pause mode.
4	Play back the source tape to search for a scene to be edited.	
5		Start recording where you want to start editing, with this recorder, by pressing the Play button.
6		To stop editing temporarily, press the Pause button.
↓	Repeat steps 4 through 6 to continue editing.	↓
7	To stop editing, press the Stop button.	

NOTES:

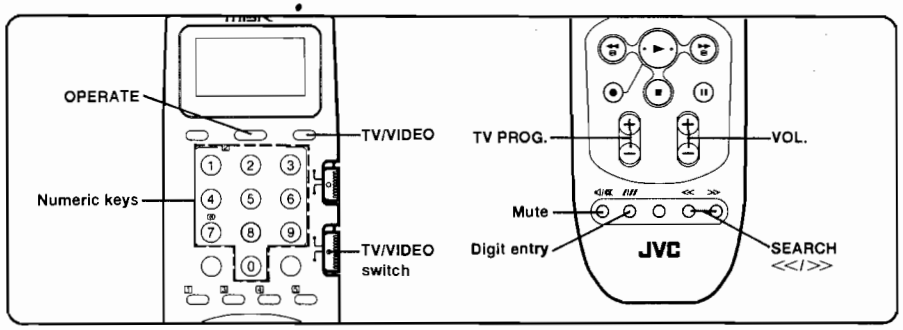
- If the camcorder is equipped with the Master Edit Control system, you can control the recorder using the camcorder's controls. See the camcorder's instruction manual for operating procedures.
- Connections made to the front panel Video and Audio input automatically override the rear panel AUDIO/VIDEO input connection.

To Watch A Compact VHS Tape

Compact VHS camcorder recordings (PAL) can be played on your video recorder. Place the recorded cassette into a C-P6 Cassette Adapter and it can be used like any full-sized VHS cassette.



Using The Remote Control For TV Operation



TV Code Setting

Your remote control can operate the basic functions of your TV set. In addition to JVC televisions, other manufacturers' televisions listed on the right can also be controlled by setting the remote control to "TV". If your television is a JVC (Code 1), you don't have to set the TV code in step 2.

1. Set the TV/VIDEO switch to "TV".
2. While holding down the OPERATE button, press the numeric keys corresponding to the code number for your TV's brand.
   - Press OPERATE to turn the TV power on.
   - Press TV/VIDEO to switch the TV between TV and VIDEO (or AV) mode.
   - Press TV PROG. to select the TV's channel.
   - Press VOL. to adjust the TV's sound volume.
   - Press Mute to mute the TV's sound.
3. To operate your recorder, set the TV/VIDEO switch back to "VIDEO".

NOTE:

- The TV PROG. button does not function with televisions using Code 2.
- The TV/VIDEO button does not function with televisions using Code 3.
- With some televisions, the OPERATE button functions only to turn the TV power off, and the TV/VIDEO button functions only to switch the TV to the VIDEO (AV) mode.
- Whenever you replace batteries in the remote control, it is necessary to re-set the TV code if your television is not a JVC TV.

IMPORTANT

Although the provided remote control unit is compatible with JVC televisions, as well as many TV models manufactured by others, it is possible that the provided remote control will not work with your TV, or in some instances, will have limited function capability.

CODE	TV BRAND NAME
1	JVC
2	BRANDT, NORDMENDE, SABA, TELEAVIA, TELEFUNKEN, THOMSON
3	FERGUSON
4	PHILIPS
5	BLAUPUNKT, GRUNDIG
6	SONY
7	PANASONIC
0	GRAETZ, ITT, LUXOR, SALORA, SELECO

To Control Your Television With Additional Buttons

The numeric keys can also be used to select the TV's channel by setting the remote control to the TV mode.

1. Set the TV/VIDEO switch to "TV".
2. Use the numeric keys and the Digit entry button or the SEARCH <</>> buttons to select the TV's channel.
   - With televisions using Code 1, 3, 4, 6 or 7 the Digit entry button corresponds to the 1-digit/2-digit entry switching button (often labelled -/--) of your TV's remote control.
   - With televisions using Code 1, 5 or 0, the SEARCH << button corresponds to the 10 + button, and the SEARCH >>· button, to the 20 + button of your TV's remote control.

NOTE:

The way these buttons are used is determined by your TV. Use these buttons as instructed for your TV's remote control.

Precautions

Please follow these safety precautions. Not doing so may result in damage to the recorder, remote control, or video cassette.

- **Avoid extreme heat and direct sunlight.**
- **Avoid extreme cold.**
- **Avoid extreme humidity.**
- **Avoid dust.**
- **Avoid places subject to vibrations.**
- **Avoid strong magnetic fields.**
- **Do not block the recorder's ventilation openings.**
- **Do not place anything heavy on the recorder or remote control.**
- **Do not place anything which might spill on top of the recorder or remote control.**
- **Do not place the recorder on cushions, pillows, or thick carpeting.**
- **Use the recorder in a stable, horizontal position only.**

Beware of moisture condensation

Moisture in the air will condense on the recorder when you move it from a cold place to a warm place, or under extremely humid conditions — just as water droplets form on the surface of a glass filled with cold liquid. Moisture condensation on the head drum will cause damage to the tape. In conditions where condensation may occur, keep the recorder's power turned on for a few hours to let the moisture dry.

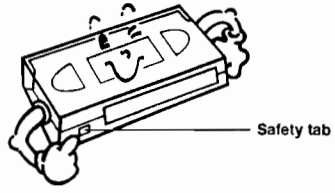
When transporting

- Be sure to remove cassette from recorder before packing.
- Avoid violent shocks to the recorder during packing and transport.

Place cassettes in cassette cases and store vertically.

Special Note On Video Cassettes

To prevent accidental recording on a recorded cassette, remove its safety tab. To record on it later, cover the hole with adhesive tape.



Specifications

ENGLISH

GENERAL

Power requirement	: AC 220 – 240 V~, 50/60 Hz
Power consumption	: 19 W
Temperature	
Operating	: 5°C to 40°C
Storage	: –20°C to 60°C
Dimensions (WxHxD)	: 360 x 94 x 348 mm
Weight	: 4.4 kg
Format	: VHS PAL standard

VIDEO/AUDIO

Signal system	: PAL-type colour signal and CCIR monochrome signal, 625 lines/50 fields
Recording system	: Rotary, slant azimuth two-head helical scan system
Signal-to-noise ratio	: 43 dB (Rohde & Schwarz noise meter)
Horizontal resolution	: 250 lines (260 lines with SQ activated)
Frequency range	: 70 Hz to 10,000 Hz
Input/Output	: 21-pin scart connector

TUNER/TIMER

TV channel storage capacity	: 80 positions (+AUX position "AU")
Channel coverage	: VHF 47 – 89/104 – 300/ 302 – 470 MHz UHF 470 – 862 MHz
Aerial output	: UHF channel 36

ACCESSORIES

Provided accessories	: Aerial cable, Infrared remote control unit, "R6" battery x 2, AC power cord

Design and specifications subject to change without notice.

SECTION 1
DISASSEMBLY

1.1 DISASSEMBLY

1.1.1 Top cover

1.Take Out 4 screws Ⓐ and a screw Ⓑ .
2.To remove the top cover,slide in direction of arrow and lift away.

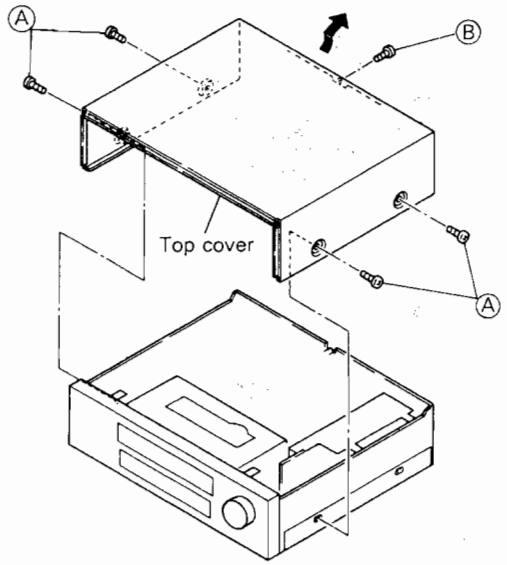


Fig. 1-1-1 Top cover

1.1.2 Front panel assembly

1.Remove the top cover.
2.Carefully disengage 2 tabs ⓐ of the Front panel assembly from the upper side of the chassis.
3.Pull the front panel assembly toward you to disengage 3 tabs ⓑ of the front panel assembly from the bottom of the chassis then remove the front panel.

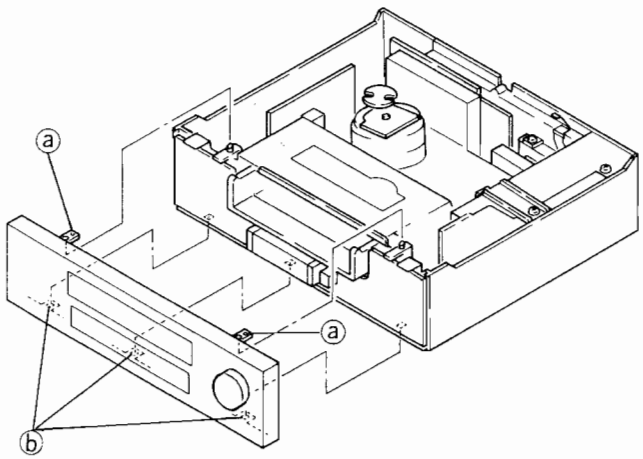


Fig.1-1-2 Front panel assembly

1.1.3 Bottom cover

1.Remove the top cover.
2.Disengage 9 claws ⓐ from the bottom of the chassis.
3.Disengage the bottom cover from the bottom of the chassis.

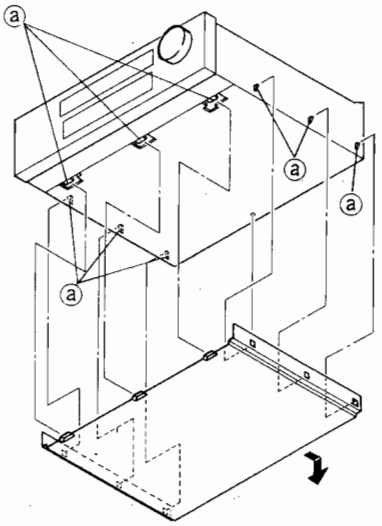


Fig.1-1-3 Bottom cover

1.1.4 FRONT board assembly

1.Remove the top cover and front panel.
2.Disengage 5 claws ⓐ from the chassis.
3.Disengage 5 claws ⓑ,then remove the FRONT board assemby in direction of arrow.

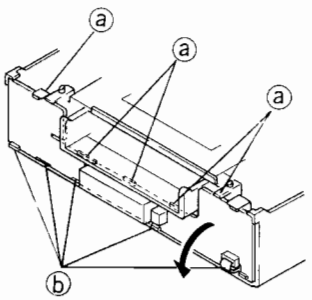


Fig.1-1-4 Front board assembly

1.1.5 SWITCHING REGULATOR board assembly

1. Remove the top cover.
2. Take out 3 screws Ⓒ and a screw Ⓓ, then remove the bracket.
3. Take out a screw Ⓔ.
4. Disengage 2 tabs ⓐ as shown in Fig.1-1-6 and remove the SWITCHING REGULATOR board assembly.

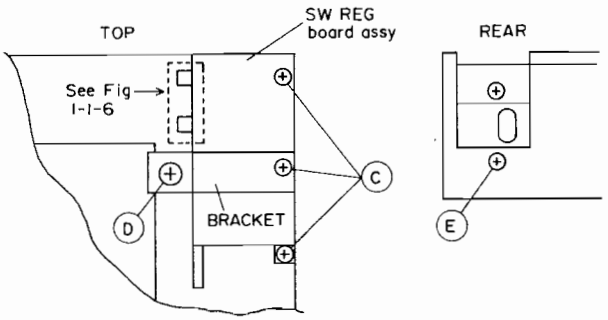


Fig.1-1-5 SWITCHING REGULATOR board assembly-(1)

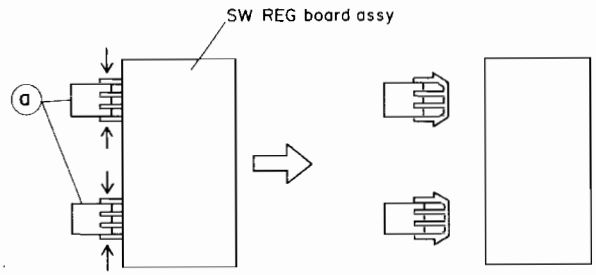


Fig.1-1-6 SWITCHING REGULATOR board assembly-(2)

1.1.6 Cassette housing assembly

1. Remove the top cover and front panel.
2. Take out 4 screws Ⓕ and 2 screws Ⓖ.
3. Disengage 2 claws ⓐ from the holder.
4. Remove the cassette housing assembly in direction of arrow.

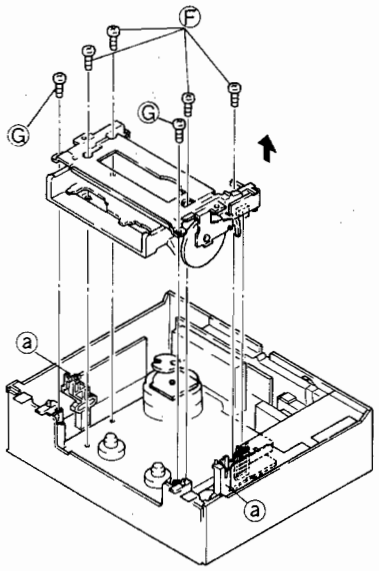


Fig.1-1-7 Cassette housing assembly

1.1.7 PRE/REC board assembly

1. Remove the top cover.
2. Take out 2 screws Ⓗ.
3. Disconnect connector CN502 from the PRE/REC board assembly
4. Remove the PRE/REC board assembly with the shield in the direction of arrow.

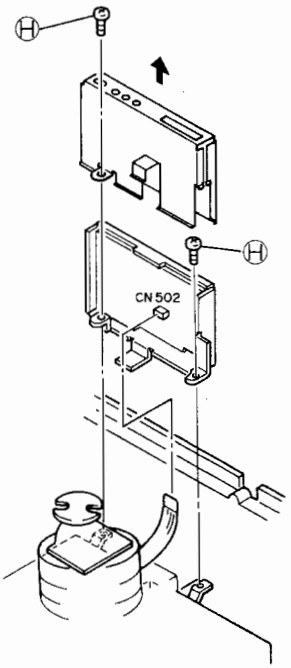


Fig.1-1-8 PRE/REC board assembly

1.1.8 Drum assembly

1.Remove the top cover.
2.Disconnect a connector of stator assembly.
3.Take out 3 screws Ⓙ, then remove the drum assembly

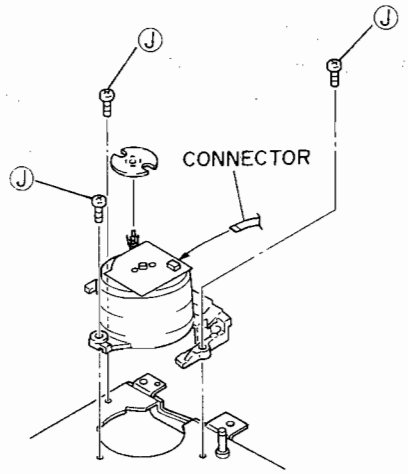


Fig.1-1-9 drum assembly

1.1.9 Main deck assembly

1.Remove the top cover, front panel, and cassette housing assembly.
2.Take out a screw Ⓚ and disconnect 3 connectors from the chassis.
3.Remove the main deck assembly in direction of arrow.

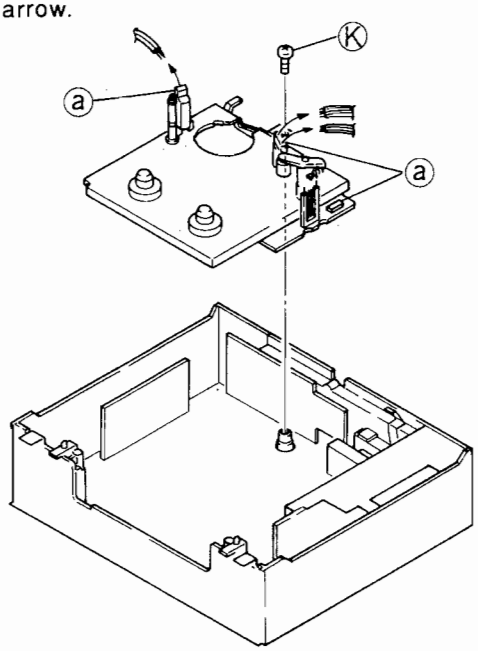


Fig.1-1-10 Main deck assembly

1.1.10 MAIN board assembly

1.Remove the top cover, front panel,SWITCHING REGULATOR, cassette housing and main deck.
2.Take out 2 screws Ⓛ and disengage 2 claws ⓐ from the chassis.
3.Remove the MAIN board assembly in direction of arrow.

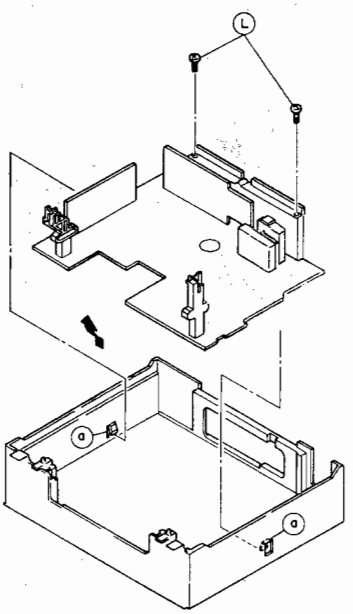


Fig.1-1-11 MAIN board assembly

1.1.11 Cassette housing installation

Note: ***Observe the mechanical phase and position (see figure)when installing the cassette housing assembly. If these are incorrect, the system will not operate properly even when tape is inserted.***

1. Check that the marks of the control cam and pinch roller cam are aligned. If necessary, turn the worm clutch by hand to adjust the position.

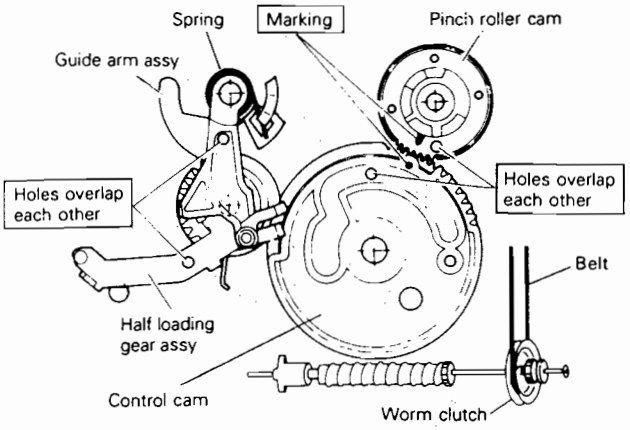
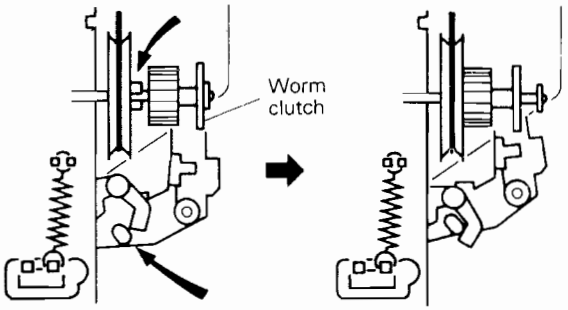


Fig. 1-1-12 Control cam and pinch roller cam position

2. Confirm that the clutch of the worm clutch assembly is locked. If necessary, engage the locked.



Flg.1-1-13(a) Not locked Fig.1-1-13(b) Lock engaged

3. Install the front panel as shown in Fig. 1-1-12 and re-engage the tabs. Supply power and use spare cassette to check for normal loading and eject operations.

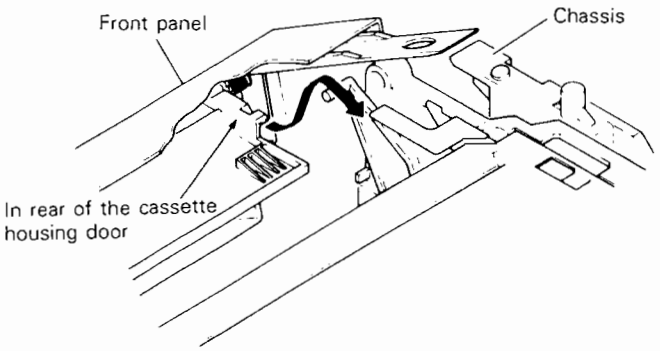


Fig.1-1-14 Cassette housing door

1.2 SERVICE POSITION -1

1. Remove the top cover, front panel and FRONT board assembly.
2. Take out 5 screws Ⓐ and a screw Ⓑ then remove the bracket.
3. Take out 2 screws Ⓒ , a screw Ⓓ and a screw Ⓔ.
4. Disengage 2 claws ⓐ from the chassis.
5. Remove the mechanism assembly(including cassette housing),MAIN board assembly and SWITCHING REGULATOR board assembly out of the chassis as shown in Fig.1-2-2.
6. Turn over the mechanism assembly and MAIN board assembly.
7. Connect the flat wire(CN1) of the FRONT board assembly to the MAIN board assembly.
8. Carry out checks & repairs as necessary as shown in.Fig.1-2-3.

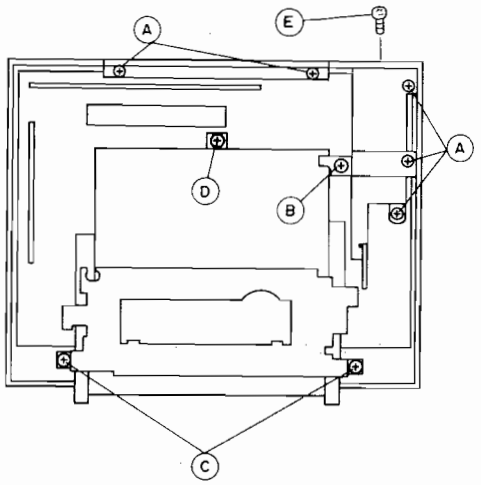


Fig.1-2-1

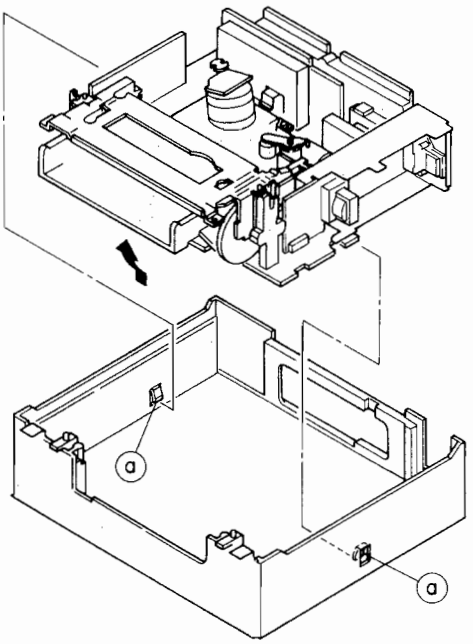


Fig1-2-2

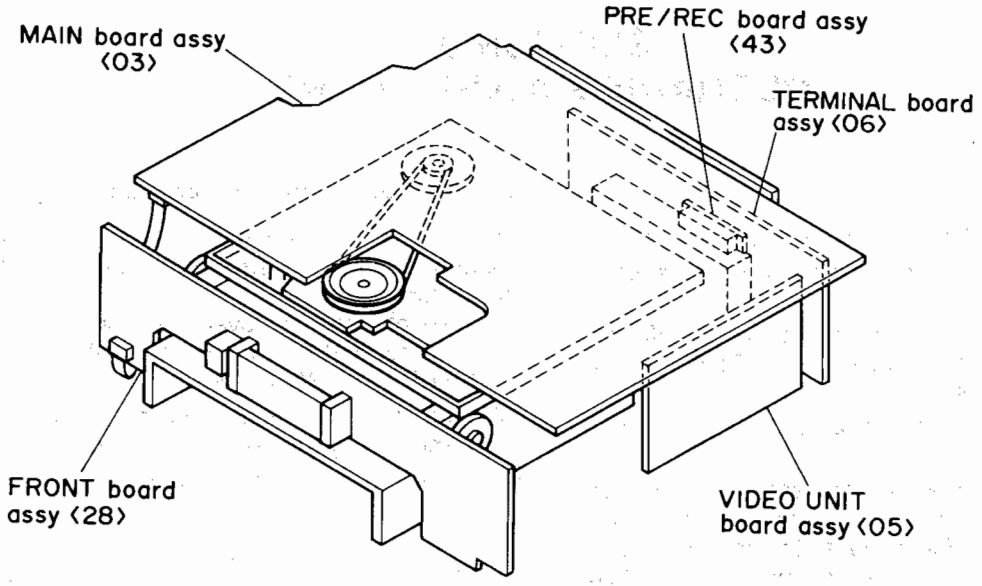


Fig.1-2-3

1.3 SERVICE POSITION -2

1.3.1 Connections for MAIN board and SWITCHING REGULATOR board assembly

1. After removing the SWITCHING REGULATOR board assembly from the chassis,connect the patch cord for check and repair as follows.

NO.	CONNECTION				DISCRIPTION	CABLE PART NO.
①	SW.REG board	CN1	←→	MAIN board CN801	Pin 11	PEMCJ0978-111

Table 1-3-1 Patch cord list

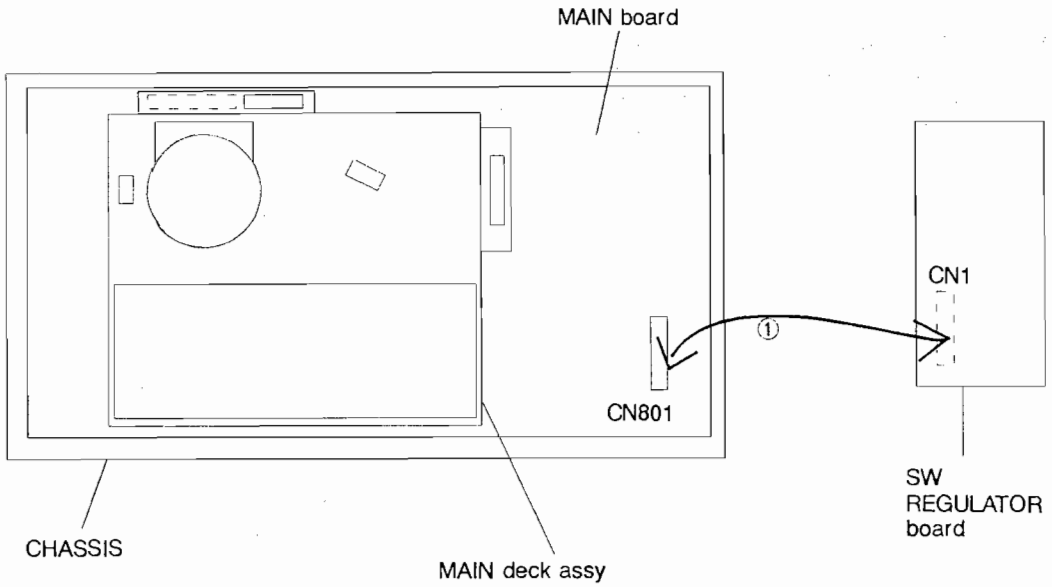


Fig. 1-3-1 Connections for patch cord

SECTION 2
MECHANISM ADJUSTMENT

2.1 PREPARATION

2.1.1 Precautions

1) Disconnect VCR from AC power before soldering.
2) Avoid imparting stress to wires when disengaging connectors.
3) Determine and correct the cause of difficulty before proceeding to adjustments. Do not disturb settings unnecessarily.
4) Use care not to damage tabs, claws, etc. during repairs.
5) Install the cassette housing assembly only when the mechanism is in the Eject or Stop mode position. In the Eject mode, the internal holder of the housing is fully raised. This is fully lowered in the Stop mode.
6) When installing the front panel assembly, be sure to engage the housing door with the door lever of the cassette housing assembly. If this is omitted, the door will not open at Eject and the cassette cannot be removed.
See Sec.1 DISASSEMBLY.

2.1.2 Check without cassette housing

Mechanism operations can be observed easily by removing the cassette housing assembly. Note the following.

1) Disable the photo transistor sensor (END SENSOR) on the main-deck by applying an opaque cover.
2) Connect pins 2 and 3 of Main board connector CN601.
3) Select the desired modes with the operation buttons. However, notice that without tape, setting for the reverse direction modes produces the Stop mode after a few seconds due to absence of the reel sensor output.

2.1.3 Manual removal of loaded tape

In event of failure which leaves the tape in the loaded position, remove it by the following procedure.

1) Take off the top cover and main deck assy in order to wind the tape on the reel.
See Sec.1 DISASSEMBLY.
2) Turn the mode motor belt by hand in the unloading direction to return the loading posts to the stop position, refer Fig. 2-1-1.

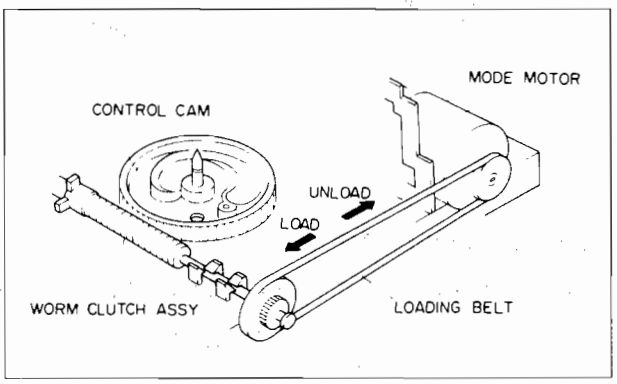


Fig. 2-1-1

3) From the bottom, turn the clutch unit by hand to wind the slackened tape onto the reel.

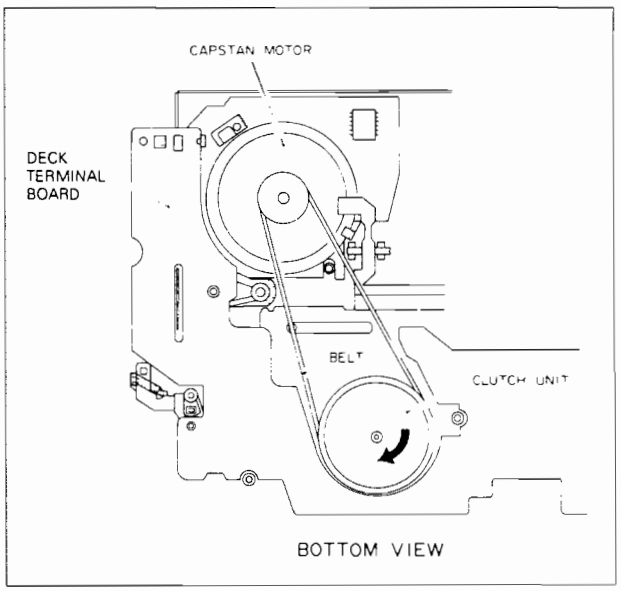


Fig. 2-1-2

4) Turn the mode motor further to where the cassette holder begins moving in the unloading direction, then remove the cassette tape.

Note: *Turn the mode motor and clutch unit alternately in order to avoid damaging the tape. It is important to avoid scratching the tape in the mechanism.*

2.1.4 Test equipment

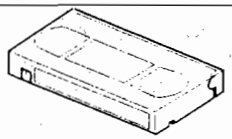
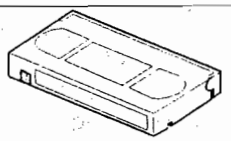
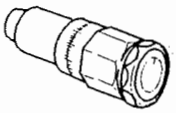
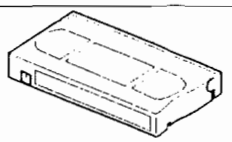
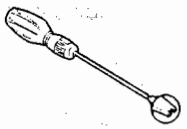
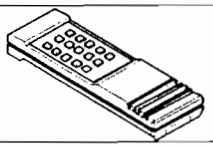
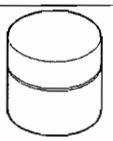
Alignment tape (SP) MH-2	Alignment tape (EP) MH-2L	Torque gauge PUJ48075-2	Back tension cassette gauge PUJ48076-2
			
A/C head positioning tool PTU94010	**Roller driver PTU94002**	**Presetting unit PTU94008**	**Grease PTU94014A**
			

Table 2-1-1

2.2 MAIN MECHANISM PARTS

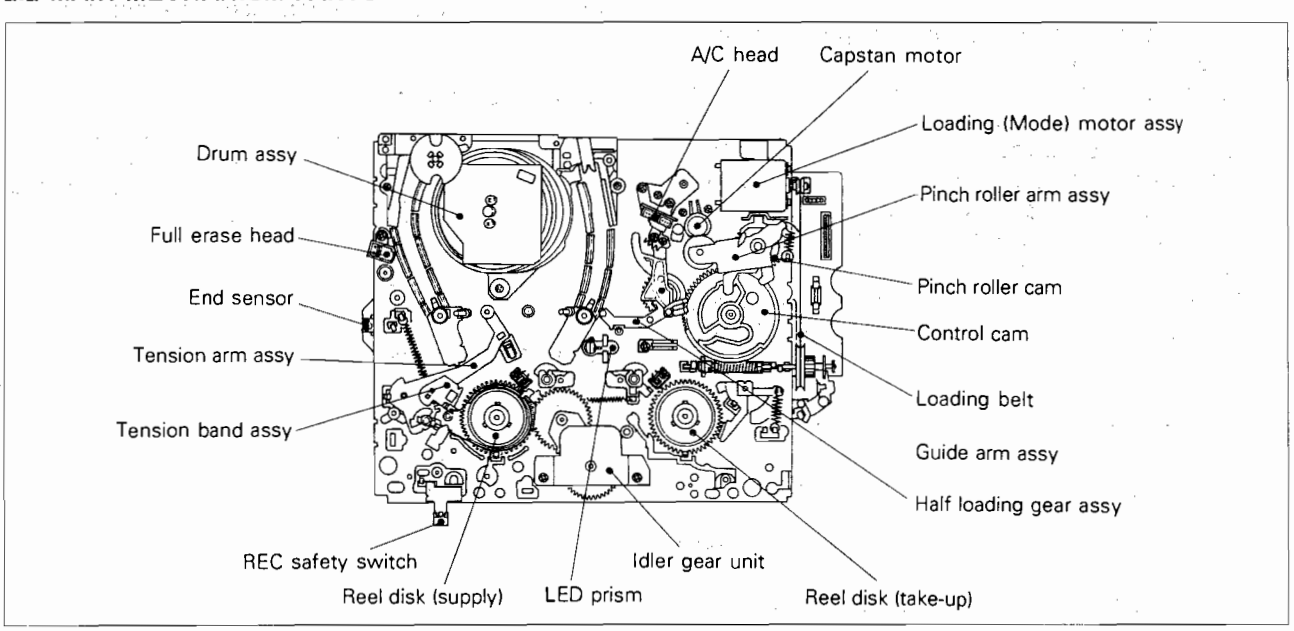


Fig. 2-2-1 Top view of main-deck

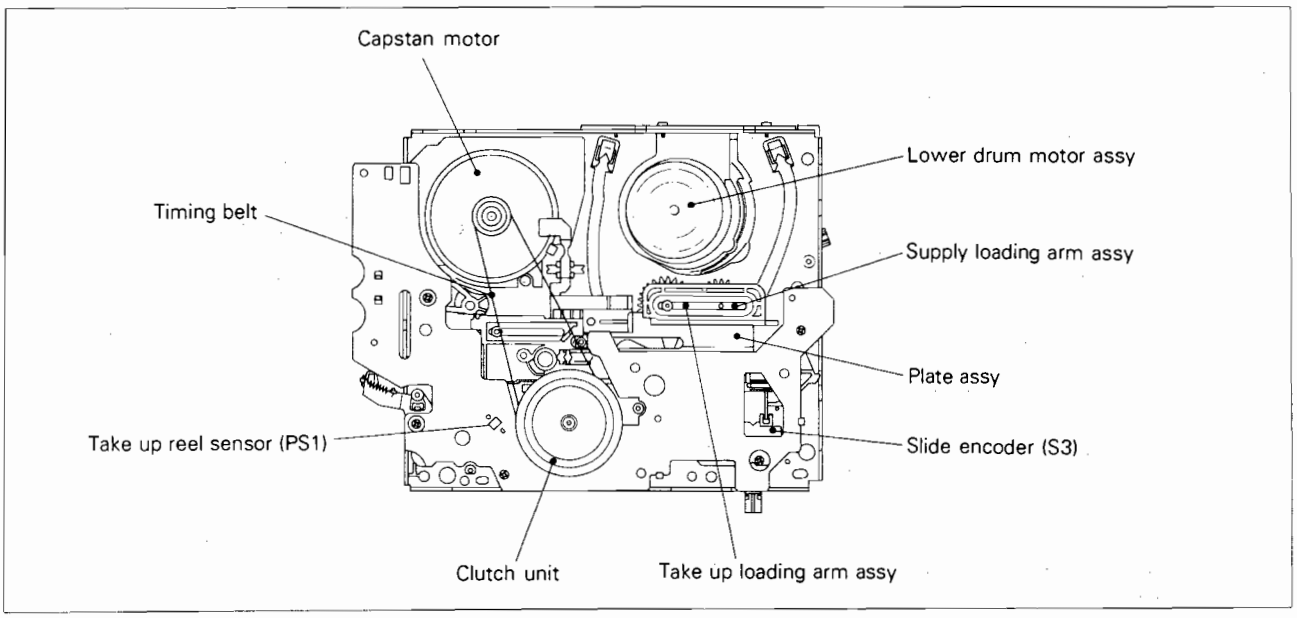


Fig. 2-2-2 Bottom view of main-deck

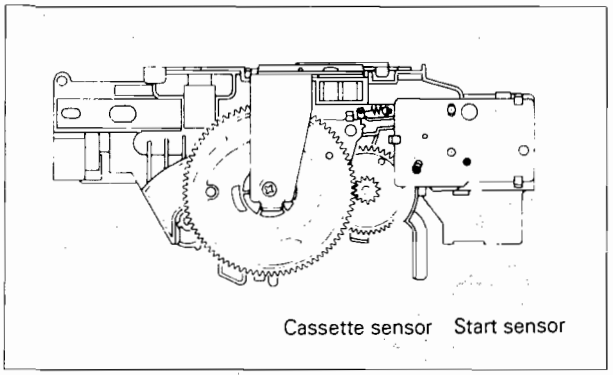


Fig. 2-2-3 Side view of cassette housing

2.2.1 Cleaning

Periodic cleaning of the tape transport system is desirable, but ordinarily not feasible in practice. Therefore, perform cleaning when a set is brought in for repairs or maintenance. Contamination of the video heads, tape guides and brushes can detract from playback picture quality and in extreme cases, even damage the tape. For cleaning, use a fine-mesh cotton cloth (about the texture of a white dress-shirt) moistened in alcohol.

- To clean the video heads, press the moistened cloth gently against the upper drum with fingertip and turn the drum by hand.
- Do not use a vertical stroke, as this may damage the heads.

2.2.2 Lubrication

Oil and grease do not normally require periodic replenshing. Apply only when replacing lubricated parts (also clean and replace lubrication of mating parts if soiled).
For parts and points to apply oil and grease, refer to the exploded views of the mechanism assembly.
Before oiling, clean with alcohol.
Apply one or two drops of oil.
Avoid excess oil.

1) Table 2-2-1 indicates the oil and grease used in this set. Use these or recommended locally available equivalents.

Category	Part No.
Oil	COSMO-HV56
Grease	KANTO-G-31KAV

Table 2-2-1

2) Grease is not required for a replacement cassette housing assembly, as this has been applied at the factory.

Note: ***Stir grease that has been stored for an extended period.***

2.3 INSPECTION AND MAINTENANCE

This product employs rotary and moving parts which wear out in the course of usage. Periodic inspection, cleaning, lubrication and maintenance are therefore important for ensuring maximum performance. Worn parts must also be replaced as and when required.

2.3.1 Suggested servicing schedule for main components

The following table indicates the suggested period for such service measures as cleaning, lubrication and replacement. In practice, the indicated periods will vary widely according to environmental and usage conditions. However, the indicated components should be inspected when a set is brought for service and the maintenance work performed if necessary.
Also note that rubber parts may deform in time, even if the set is not used.

System	Parts Name	Operation hours						
		250	500	750	1000	1250	1500	2000
Tape Transport	Upper drum assy	★	★	★	○	★	○	○
	A/C head	★			○			○
	Pinch roller arm assy	★	★	★	★	★	★	★
	Full erase head							
	Tension arm assy							
	Lower drum assy							
	Capstan motor (Shaft)							
	Half loading gear assy							
	Guide arm assy							
Drive	Capstan motor							○
	Loading belt			○				○
	Mode motor assy			○				○
	Reel disk (Supply)			○				○
	Reel disk (Take-up)			○				○
	Clutch assy			○				○
	Worm clutch assy							○
	Plate assy							○
Others	Brush assy			○				○
	Tension band assy			○				○

★ : Cleaning
○ : Inspection or Replacement if necessary

Table 2-3-1

2.4 MAIN PARTS REPLACEMENT AND ADJUSTMENT

2.4.1 Stator assembly

1) Take out 2 screws (A).
2) Raise the Stator Assembly in the direction indicated by the arrow to remove it (also remove the Inertia Roller).
3) Remove the flat cable.
4) To reinstall, first secure the flat cable, then insert 2 screws (A).
5) After reinstalling, be sure to perform switching point adjustment.

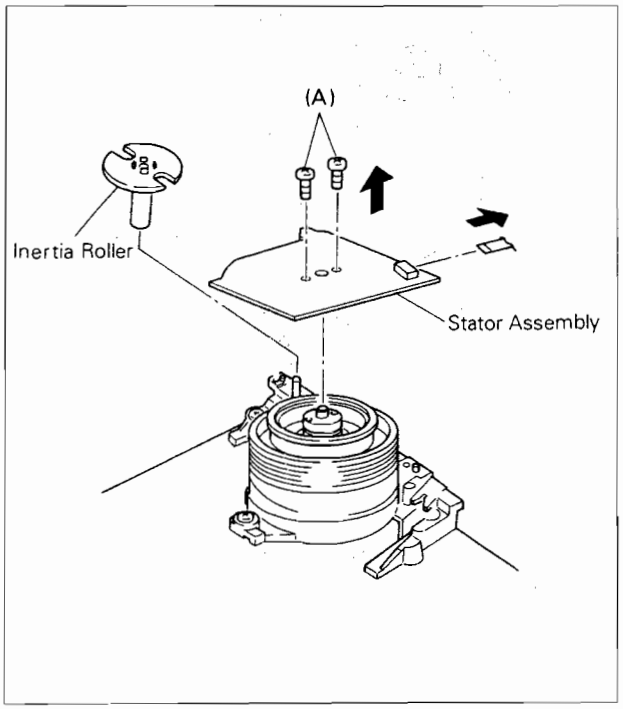


Fig. 2-4-1

2.4.2 Rotor assembly

1) Remove the Stator Assembly.
2) Take out 2 screws (B) and remove the Rotor Assembly.

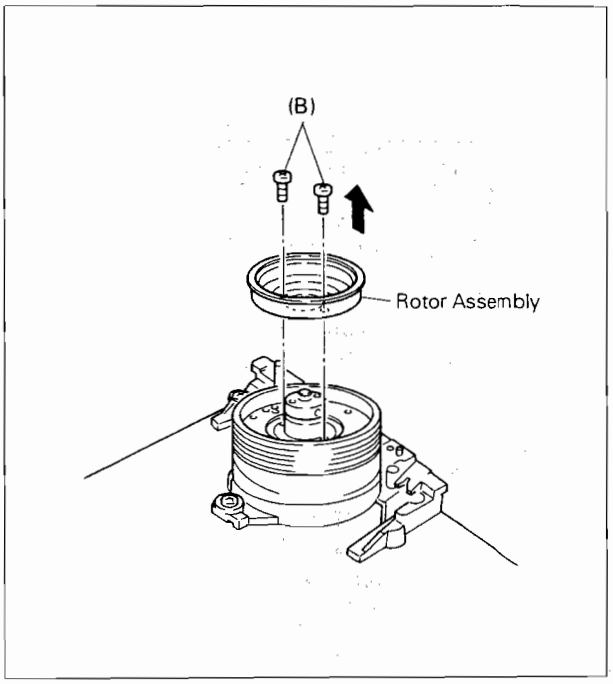


Fig. 2-4-2

Note: *A normal picture will not be obtained unless the phase is properly aligned when installing the Rotor Assembly. Also note there are three types of Rotors.*

3) Align the Upper Drum and Rotor Assembly phase as indicated in Fig. 2-4-3.

4) Overlap holes (a) of the Upper Drum with holes (b) of the Rotor Assembly (align holes in 3 locations) and secure with 2 screws (B) (see Fig. 2-4-3).

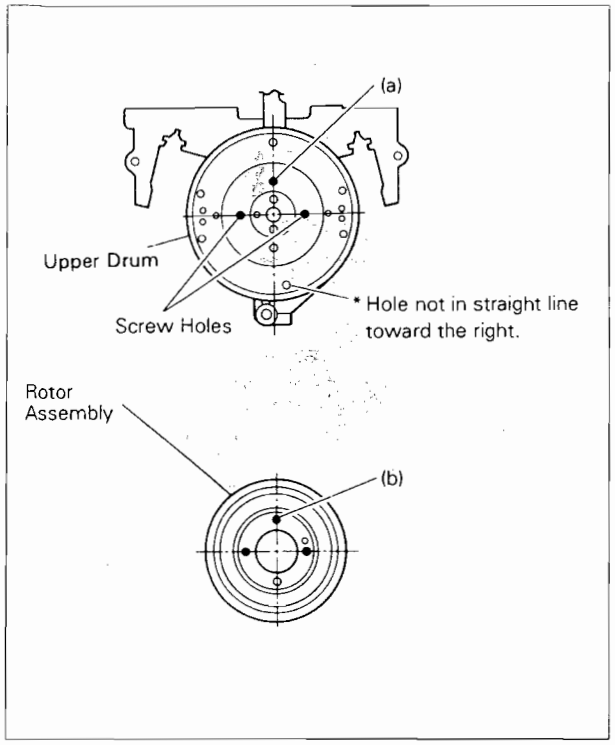


Fig. 2-4-3

2.4.3 Drum subassembly

1) Disengage the PRE/REC AMP board connector and flat cable.

2) Take out 3 screws (C) and remove the Drum Subassembly.

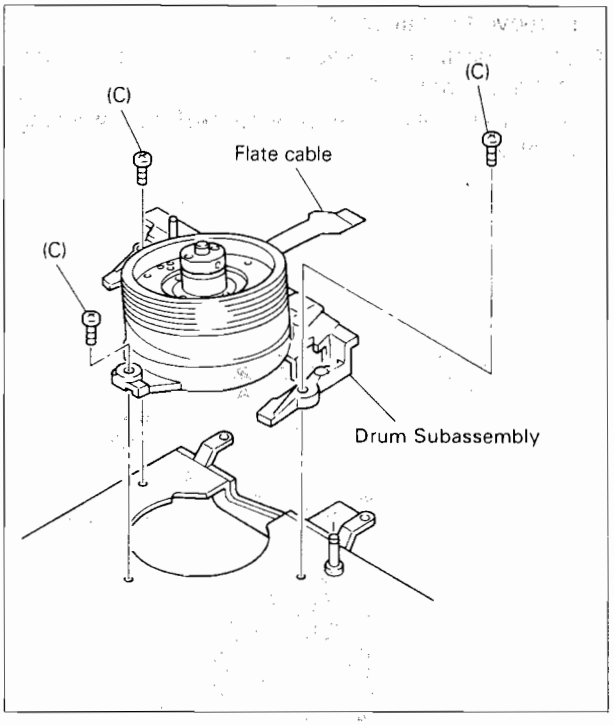


Fig. 2-4-4

2.4.4 Upper Drum assembly

1. Removal

1) Remove the Stator and Rotor Assemblies.
2) Use a 1.5 mm hexagonal wrench to loosen the Collar Assembly screw and remove the Collar Assembly.
3) Remove the Upper Drum Assembly and use tweezers to remove the Washer.

Note: *As grease is applied to the Brush, use care to avoid contamination by dirt or other foreign matter. If the Brush is replaced, use care regarding top and bottom direction and be sure to apply the specified grease (PTU94014A) to the contact sections (2 locations).*

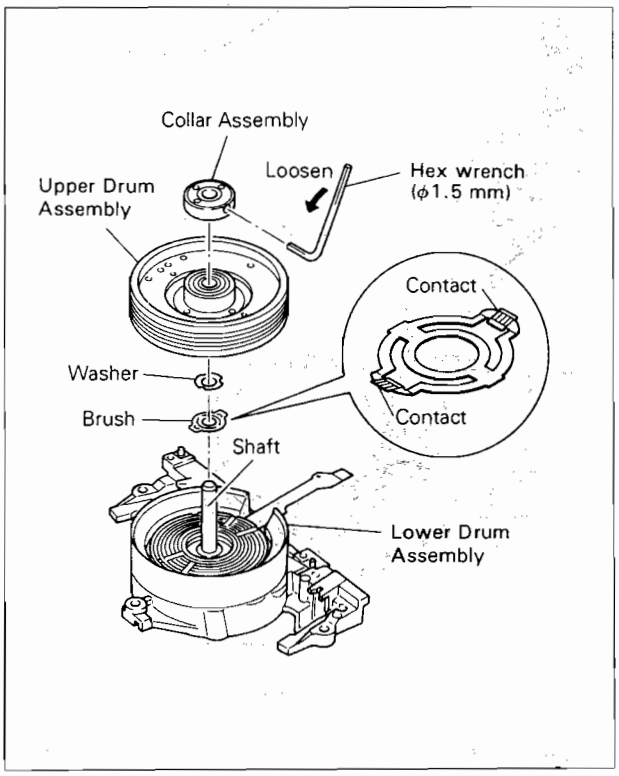


Fig. 2-4-5

2. Installation

1) Use an air brush to clean the Lower Drum Assembly and the coil section of the new Upper Drum Assembly.
2) Set a new Washer on the Drum shaft (see Fig. 2-4-6).

Note: *Be sure to use the new Washer supplied with the replacement Upper Drum Assembly.*

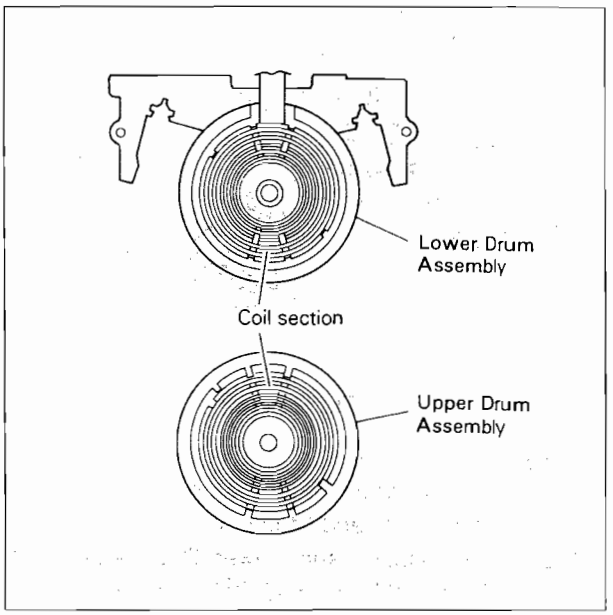


Fig. 2-4-6

3) Note the top and bottom of the Collar Assembly and determine the position as indicated in Fig. 2-4-7.

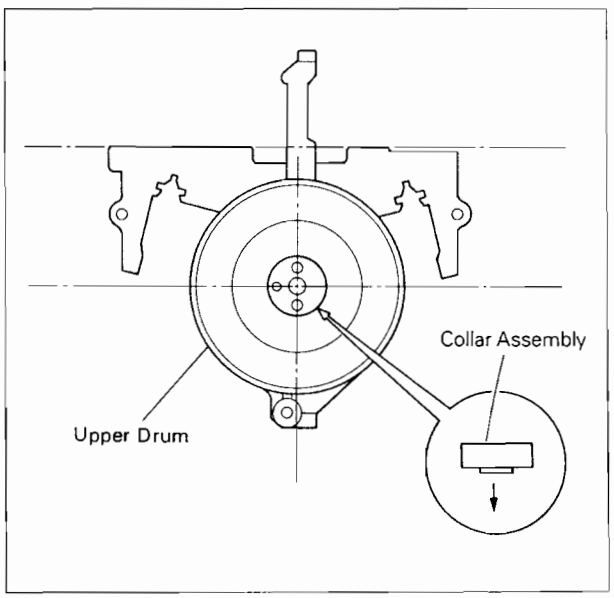


Fig. 2-4-7

4) While pressing the Collar Assembly evenly from above with the fingertips, secure the hexagonal screw.

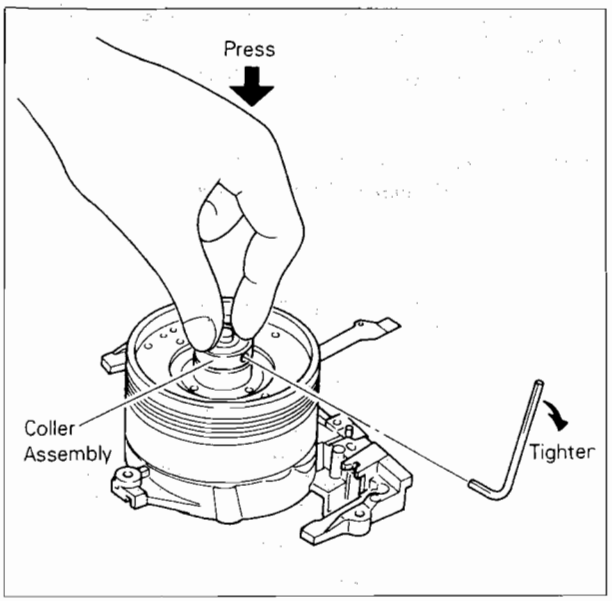


Fig. 2-4-8

5) After installing, gently turn the Upper Drum by hand and confirm normal rotation.
6) Install the Rotor and Stator Assemblies.
7) Clean the Upper and Lower Drum Assemblies and perform the following adjustments;

- Switching Point Adjustment
- Interchangeability Adjustment (be sure to check EP mode)
- Recording color level Adjustment

2.4.5 Tension arm positioning

1) Remove the cassette housing, set the playback mode.
(Refer to 2.1.2 Check without cassette housing)
2) Turn the eccentric adjust pin to position the mark of the chassis with the tension arm tip as shown Fig. 2-4-9.

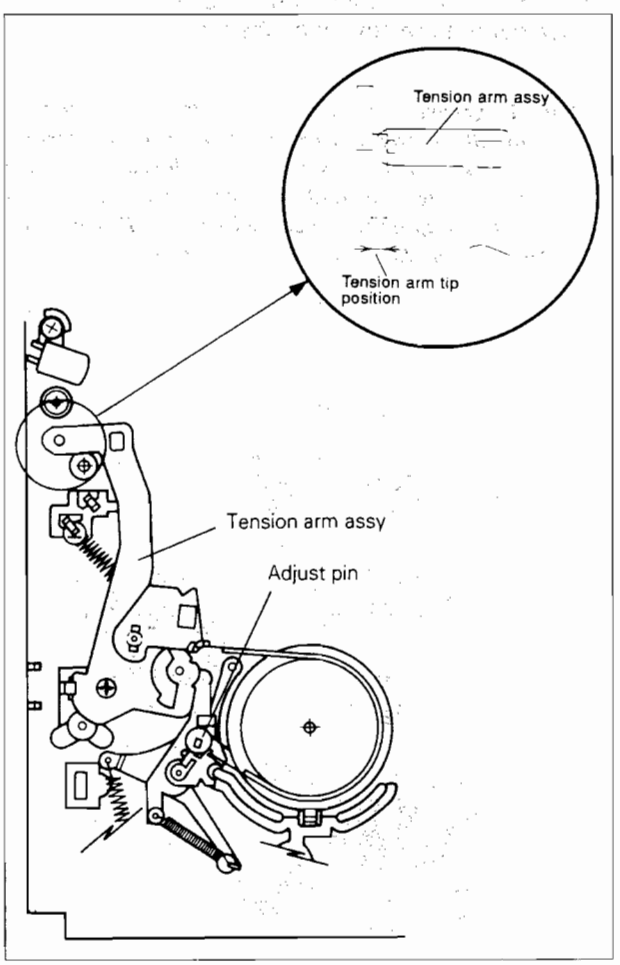


Fig. 2-4-9

Note: *Normally, if the tension post position is properly adjusted, the back tension will assume the correct value. Use the back tension cassette gauge and confirm playback tension is 35 g-cm to 48 g-cm (13.8 g-inch to 18.9 g-inch).*

2.4.6 Pinch roller cam position

1) Set the mechanism to the eject mode (cassette holder is locked in eject position).
2) Install the pinch roller cam so the largest hole near the gear teeth is aligned with the hole on the chassis.
3) Set the control cam on the deck with the hole in the groove aligned with the hole on the chassis. Observe that the small hole on the control cam and the mark on the pinch roller cam are aligned. (If the control cam does not fit readily, shift the loading arm and plate assembly within the range of mechanical play.)
4) Install the half-loading gear assembly with the hole aligned with the hole on the chassis. Secure with split washer.
5) Install the guide arm assembly with the hole aligned with hole on the chassis. Engage the spring properly.

Note: *This is the correct mechanical alignment to install the cassette housing. The cassette housing should also be in the eject position.*

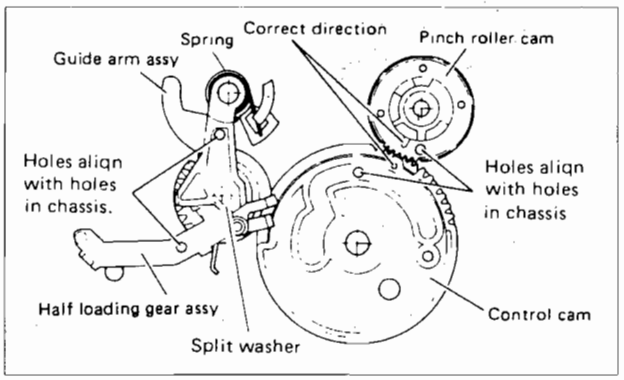


Fig. 2-4-10

2.4.7 Audio/control head height

1) Adjust the 3 screws (screw ①,②,③ in Fig. 2-5-1) to set the audio/control head height to 6.6 mm (0.26 in). Adjust all screws equally.
2) Perform interchangeability adjustments to obtain the specified control pulse and audio signal levels.

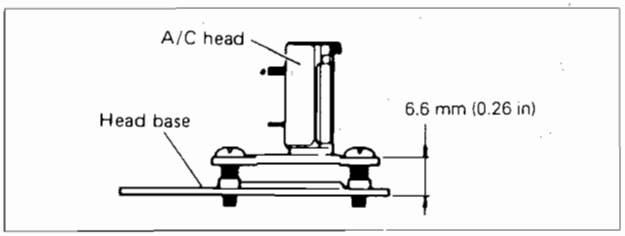


Fig. 2-4-11

Notes:
- *It is very important to correctly adjust the control pulse and audio signal in addition to the mechanical tape path.*
- *Perform interchangeability adjustments after electrical adjustments.*

2.4.8 Loading arm and plate assembly position

1) Set for Eject mode and remove the deck terminal board.
2) Check that the preset hole of the plate assembly is in the preset position. Temporarily insert a 3 mm (0.12 in) screw to hold the position.
3) By hand, hold the loading arms in the unloading (inner) position and set the plate assembly from above.
4) Install Red and White split washers. Remove temporary screw.
5) Move the mode motor belt by hand and confirm mechanism operation.

Note: *Observe that the brake assembly pin is engaged with the plate assembly groove.*

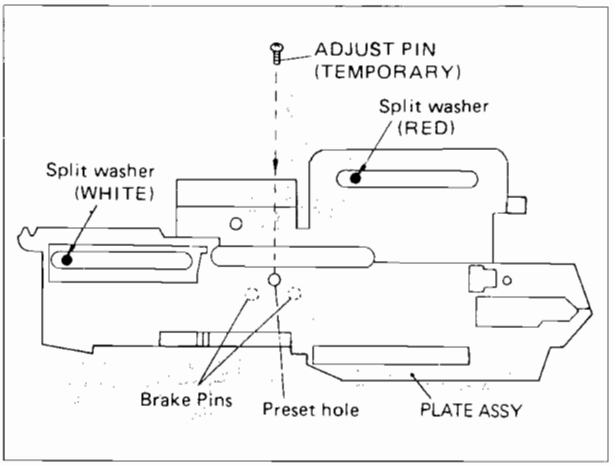


Fig. 2-4-12

2.4.9 Reel disk height

1) Measure the height of the reel disk above the main chassis.
2) Add or remove washers at the bottom of the reel disk to adjust for 12 mm (0.47 in). See Fig. 2-4-13.

Note: *This adjustment is normally not needed. Perform after replacing the reel disk.*

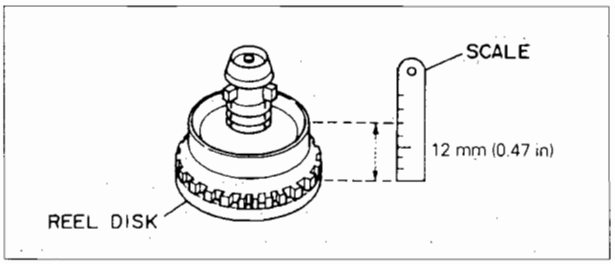


Fig. 2-4-13

2.5 TAPE INTERCHANGEABILITY ADJUSTMENT

Note: *This adjustment is extremely important. However, it is normally not required during routine service. Perform only after replacing major components (A/C head, drum assembly, etc.).*

2.5.1 Height and azimuth adjustment of A/C head

1) Connect the oscilloscope to the audio output jack on the rear of the deck.
2) Play back the stairstep portion (6 kHz, Mono) of the alignment tape.
3) Adjust Black Screw ② on the head base in Fig. 2-5-1 so that the output level is at a maximised.
4) Readjust Screw ① shown in Fig. 2-5-1 for maximum output.

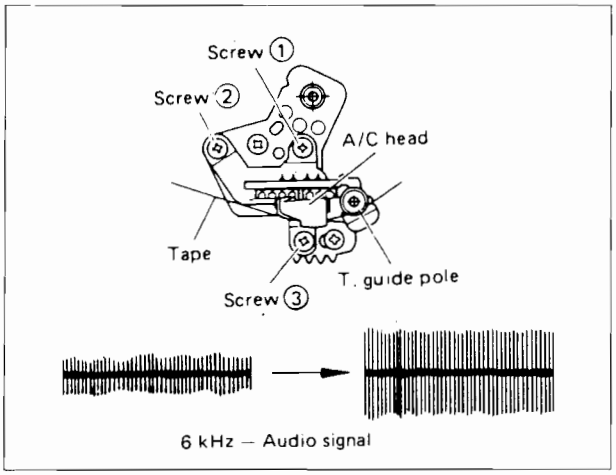


Fig. 2-5-1

2.5.2 Horizontal Position adjustment of A/C head

1) Play back the stairstep portion of the alignment tape.
2) Connect the oscilloscope to TP506 (PB FM) on the PRE/REC AMP board. Use TP511 (DRUM FF) as a trigger. Confirm that the RF envelope appears, as in Fig. 2-5-4.
3) Set the neutral manual tracking position, by simultaneously press of the (+) and (-) tracking buttons.
4) If adjustment is required, slightly loosen screws ④ and ⑤. Set A/C head positioning tool on the A/C head adjusting boss as shown in Fig. 2-5-2.
5) Turn the tool first to position the A/C head fully toward the capstan. Then gradually return it toward the drum and stop at the position of maximum FM waveform output level as shown in Fig. 2-5-4.
6) Tighten screw ⑤. Remove the tool and tighten screw ④.
7) Eject the tape and then re-insert again. Playback the Alignment Tape. Set the neutral manual tracking position. Push the tracking (+) button (count the number of pushes) until the maximum envelope is reduced to 1/2. Eject the tape and re-insert it again. Playback the Alignment Tape. Set the neutral manual tracking position. Push the tracking (-) button (count the number of pushes) until the maximum envelope is reduced to 1/2.
8) Confirm that the number of pushes are equal.

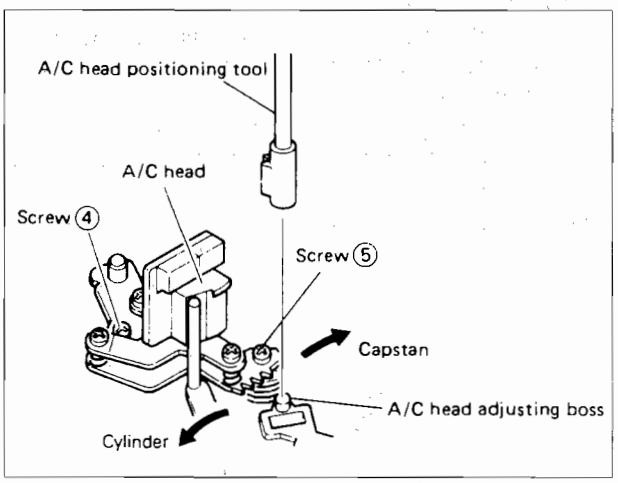


Fig. 2-5-2

2.5.3 Playback tracking

This is the most important adjustment. If incorrect, proper tracking will not be obtained in recording and playback.
Other problems that may occur are noise in parts of the picture, poor color reproduction and picture instability.

1) Play back the stairstep portion of the alignment tape.
2) Connect the oscilloscope to TP506 (PB FM) on the PRE/REC AMP board. Use TP511 (DRUM FF) as a trigger. Confirm that the envelope appears, as in Fig. 2-5-4.
3) Operate the tracking adjustment (press the tracking buttons during playback) and set for maximum playback envelope waveform.
4) If adjustment is required, first slightly loosen the set screw located at the bottom of the guide rollers. Using the guide roller adjustment tool, adjust the supply and take-up guide rollers (refer to Fig. 2-5-3) to obtain the correct waveform. Refer to Fig. 2-5-5.

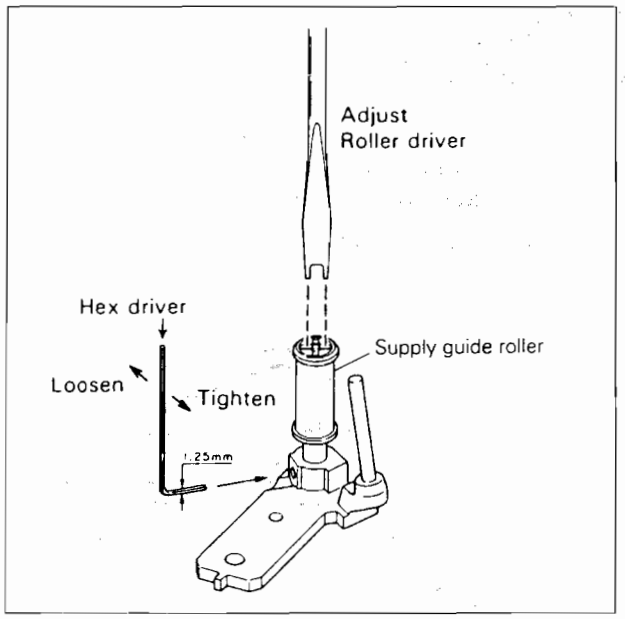


Fig. 2-5-3

5) By pushing the tracking buttons several times, vary the FM waveform output from maximum to minimum (and vice versa) gradually, and confirm that the waveform remains flat as in Fig. 2-5-6.
6) If the FM waveform varies and is not mostly flat, adjust the height of guide roller(s) until the RF waveform is as flat as possible.
7) Eject a tape and then playback tape again, since the height of guide rollers may move during adjustment. Confirm, when pushing the tracking (+) and (–) buttons, FM waveform variation is always flat.
8) After adjustment, confirm that the tape wrinkling does not occur at the roller upper or lower limits, as in Fig. 2-5-7.
9) Perform step 2.5.1 and 2.5.2.

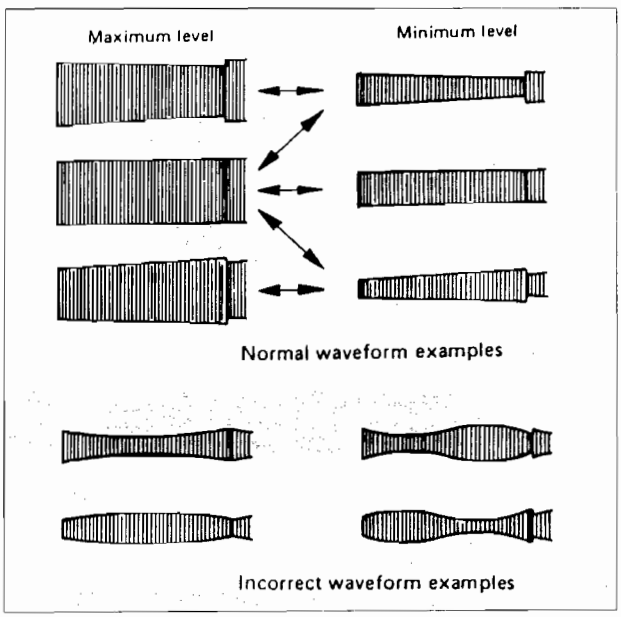


Fig. 2-5-4

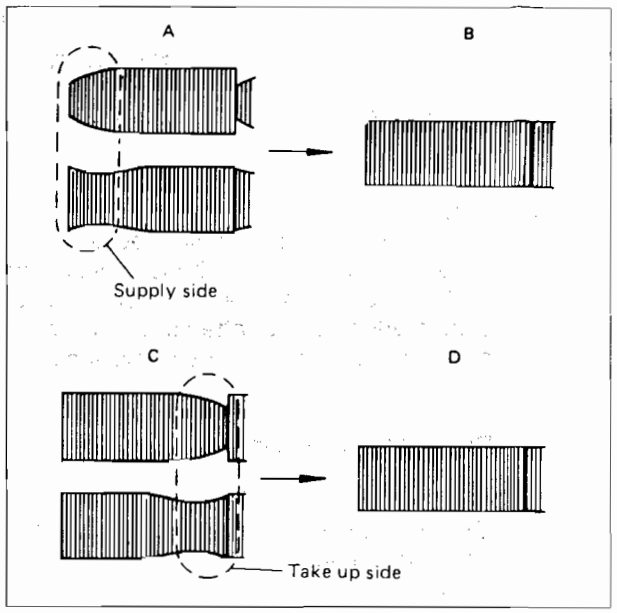


Fig. 2-5-5

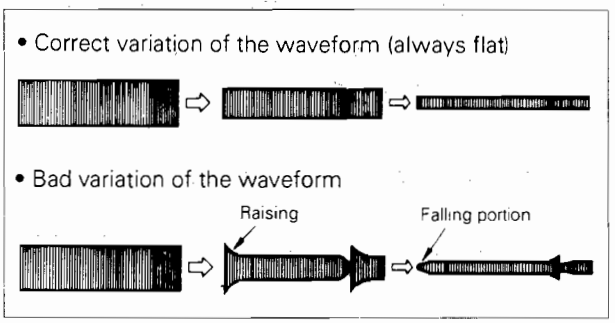


Fig. 2-5-6

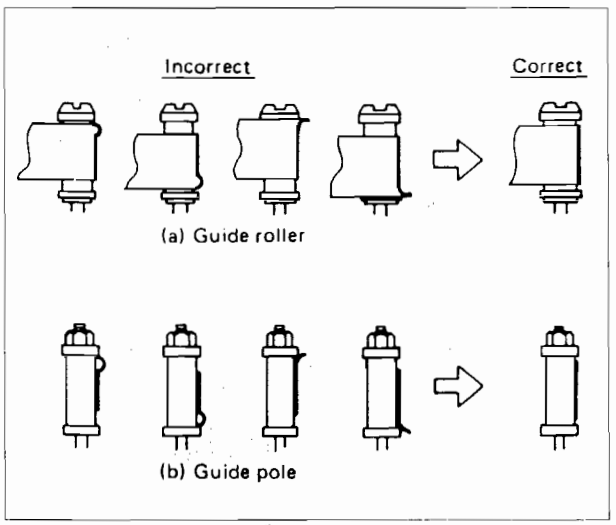


Fig. 2-5-7

SECTION 3
ELECTRICAL ADJUSTMENT

3.1 DECK SECTION ADJUSTMENT

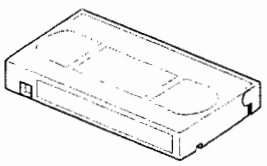
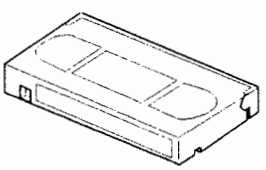
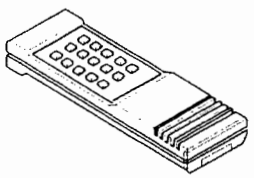
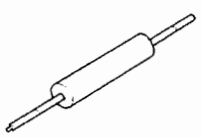
3.1.1 PRECAUTION

Electrical adjustments are required after replacing circuit components and certain mechanical parts. It is important to perform these adjustments only after all repairs and replacements have been completed. Also, do not attempt these adjustments unless the proper equipments is available.

1. Required test equipment

1. Colour television or monitor
2. Osciloscope: wide-band, dual-trace, triggered delayed sweep
3. Frequency counter
4. Digital voltmeter
5. Signal generator: RF/IF sweep/maker
6. Signal generator: PAL colour bar, stairstep
7. Recording tape

2. Required adjustment tools

Alignment tape (SP) MH-2	Alignment tape (LP) MH-2L
	
Presetting unit PTU94008	Adjustment driver YTU93004-2
	
∗SMC replacement tools YTU94038C	

∗**Note:** *It is convenient for replacing chip parts.*

3. Colour bar signal, colour bar pattern and video sweep signal

- Colour bar signal of pattern generator

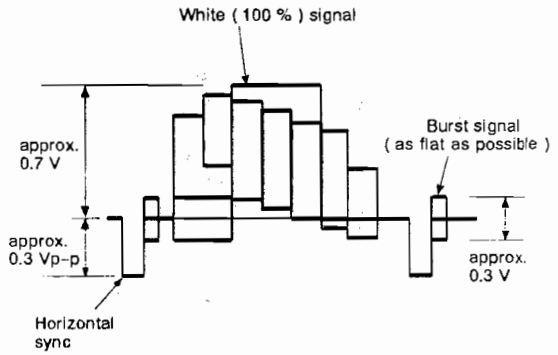


Fig. 3-1-1 Colour bar signal of pattern generator

- Colour bar signal

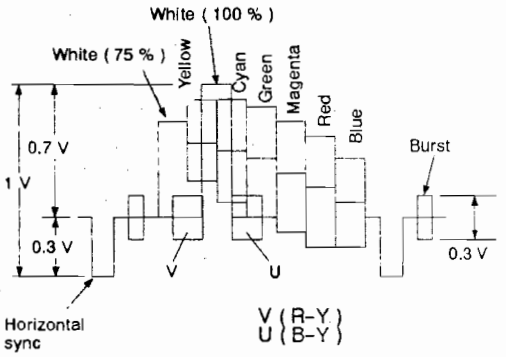


Fig. 3-1-2 Colour bar signal waveform

- Colour bar pattern

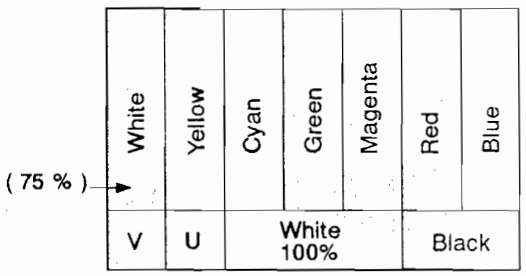


Fig. 3-1-3 Colour bar pattern

- Video sweep signal

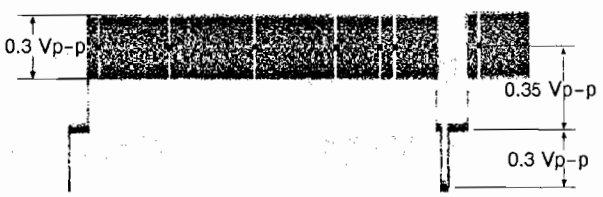


Fig. 3-1-4 Video sweep signal

3.1.2 SWITCHING REGULATOR CIRCUIT

Note: *Unless otherwise specified, all measurement points and adjustment parts are located on the MAIN BOARD.*

1. 5V DC output voltage

Signal	•TUNER
Mode	•SP •REC
Equipment	•Digital voltmeter
Measurement point	•Q802 Emitter (SWD 5 V) •Q803 Emitter (GND)
Adjustment part	•R805 (SW 5 V)
Specification	•5.2 ± 0.1 V DC

1) Connect a digital voltmeter to Q802 Emitter (SWD 5V) and Q803 Emitter (GND).
2) Adjust R805 for 5.2 ± 0.1 V DC.

3.1.3 SERVO CIRCUIT

Note: *Unless otherwise specified, all measurement points and adjustment parts are located on the MAIN BOARD.*

1. PB switching point

Signal	•Alignment tape (MH-2) •Stairstep
Mode	•PB •Digital tracking OFF
Equipment	•Oscilloscope
Measurement point	•JA701 pin 19 (VIDEO OUT) [TERMINAL BOARD]
Trigger slope (-)	•TP511 (DRUM FF) [PRE/REC AMP BOARD]
Adjustment tool	•Presetting unit [PTU94008]
Specification	•6.5 ± 0.5 H

Note: *Use only buttons "E" and "F". Depressing other buttons during adjustment may cause adjustment errors.*

1) Connect an oscilloscope to JA701 pin 19 and external trigger from TP511 (negative slope).
2) Playback the stairstep signal of the alignment tape.
3) Set the tracking control to the centre position by simultaneously pressing the (+) and (-) buttons.
4) Adjust by pressing "E" (+) or "F" (-) buttons of the presetting unit for position the trigger point 6.5 ± 0.5 H from V.sync.

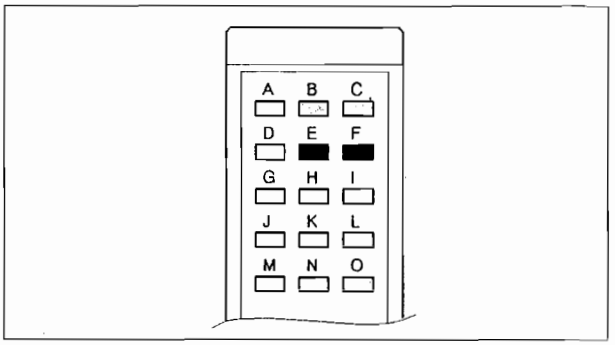


Fig. 3-1-5 Presetting unit

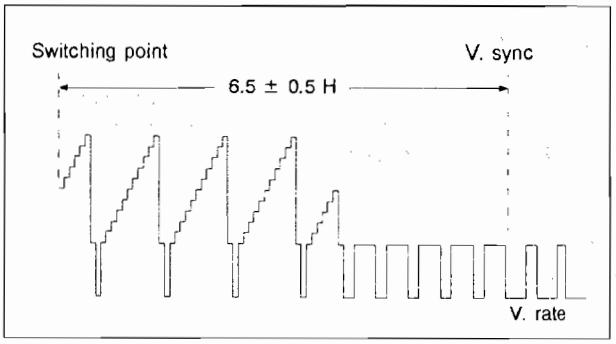


Fig. 3-1-6 PB switching point

2. Slow tracking preset

Signal	•Colour bar
Mode	•SP •REC → PB (SLOW) •Digital tracking OFF
Equipment	•TV-Monitor
Adjustment tool	•Presetting unit [PTU94008]
Specification	•Mimimum noise

Note: *Set VCR to the mode A by remote controller.*

1) Record a colour bar signal in the SP mode.
2) Playback recorded signal on the FWD slow mode.
3) Set the tracking control to the centre position by simultaneously pressing the (+) and (-) buttons.
4) Observe the display on a TV monitor and adjust for optimum noise condition (best tracking) by depressing "C" (+) or "B" (-) buttons of the presetting unit as required.
5) Depress the STOP button.
6) Confirm that the bar noise is not visible on the monitor in the slow mode.

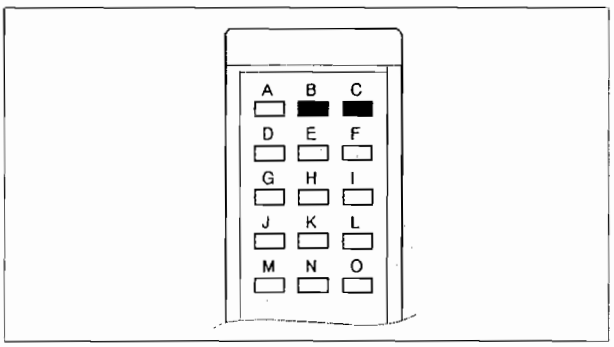


Fig. 3-1-7 Presetting unit

3.1.4 VIDEO CIRCUIT

Note: *Unless otherwise specified, all measurement points and adjustment parts are located on the VIDEO UNIT BOARD.*

Important:

Item 1. thru 6..

1) Ordinarily performing these adjustments is not required. Adjustments should be performed only if IC2 on the VIDEO UNIT BOARD has been replaced.
2) To adjust, replace fixed resistor with variable chip resistor, then adjust as required.

1. EE Y level

Signal	•Colour bar
Mode	•EE
Equipment	•Oscilloscope
Measurement point	•JA701 pin 19 (VIDEO OUT) (TERMINAL BOARD)
Adjustment part	•R42 (EE Y LEVEL)
Specification	•2.00 ± 0.06 Vp-p (Unterminated)

1) Connect an oscilloscope to JA701 pin 19.
2) Confirm that Y level is 2.00 ± 0.06 Vp-p. Unterminated.
3) If necessary, replace R42 with the variable chip resistor NVP1301-153N and adjust it for 2.00 ± 0.06 Vp-p, as in Fig. 3-1-8.

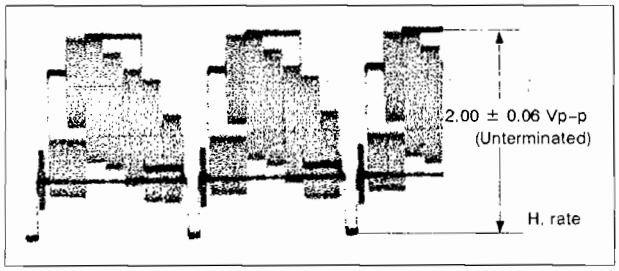


Fig. 3-1-8 EE Y level

2. White clip

Signal	•Colour bar
Mode	•EE
Equipment	•Oscilloscope
Measurement point	•IC2 pin 22
Adjustment part	•R45 (W/D CLIP)
Specification	•WHITE CLIP : 190 ± 4 % •DARK CLIP : 145 ± 8 %

1) Connect an oscilloscope to IC2 pin 22.
2) Confirm that white clip is 190 ± 4 % and dark clip is 145 ± 8 %.
3) If necessary, replace R45 with the variable chip resistor NVP1301-103N and adjust it 190 ± 4 % white clip and 145 ± 8 % dark clip, as in Fig. 3-1-9.

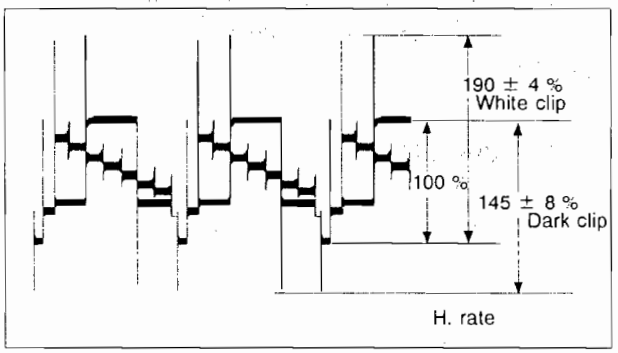


Fig. 3-1-9 White clip

3. Carrier & deviation

· Carrier

Signal	•No signal-VIDEO INPUT (Shorted RCA Phono Plug)
Mode	•EE
Equipment	•Frequency counter
Measurement point	•CN2 pin 5
Adjustment part	•R28 (CARRIER)
Specification	•3.80 MHz ± 40 kHz

1) Connect the frequency counter to CN2 pin 5.
2) Confirm that frequency is 3.80 MHz ± 40 kHz.
3) If necessary, replace R28 with the variable chip resistor NVP1301-223N and adjust it for 3.80 MHz ± 40 kHz.

· Deviation

Signal	·Colour bar
Mode	·REC then PB
Equipment	·Oscilloscope
Measurement point	·JA701 pin 19 (VIDEO OUT) 〔TERMINAL BOARD〕
Adjustment part	·R29 (DEVIATION)
Specification	·2.00 ± 0.06 Vp-p (Unterminated)

4) Record and playback a colour bar signal.
5) Confirm that Y level is 2.00 ± 0.06 Vp-p unterminated.
6) If necessary, replace R29 with the variable chip resistor NVP1301-103N and adjust it for 2.00 ± 0.06 Vp-p, as in Fig. 3-1-10.

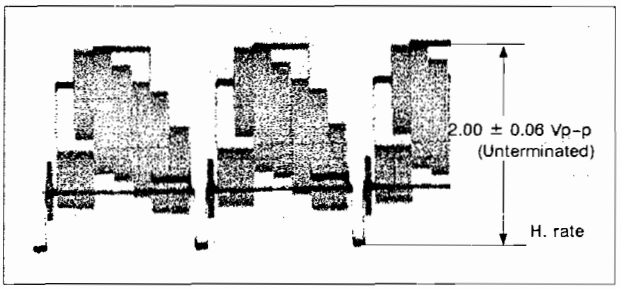


Fig. 3-1-10 Carrier & deviation

4. YNR level

Signal	·Colour bar
Mode	·EE
Equipment	·Oscilloscope
Measurement point	·IC2 pin 9
Adjustment part	·R18 (N.C. BALANCE)
Specification	·Mimimum DC step difference

1) Connect an oscilloscope to IC2 pin 9.
2) Confirm that DC step difference is minimum.
3) If necessary, replace R18 with the variable chip resistor NVP1301-152N and adjust it for minimum DC step difference, as in Fig. 3-1-11.

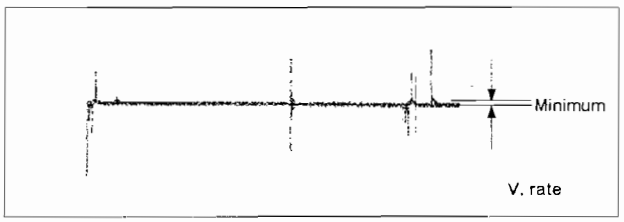


Fig. 3-1-11 YNR level

5. PB Y level

Signal	·Colour bar
Mode	·SP ·REC then PB
Equipment	·Oscilloscope
Measurement point	·JA701 pin 19 (VIDEO OUT) 〔TERMINAL BOARD〕
Adjustment part	·R25 (PB Y LEVEL)
Specification	·2.00 ± 0.06 Vp-p (Unterminated)

Note: ***Confirm that procedure 3.1.4-2. is correct before performing this adjustment procedure.***

1) Connect an oscilloscope to JA701 pin 19.
2) Record and playbck a colour bar signal.
3) Confirm that Y level is 2.00 ± 0.06 Vp-p unterminated.
4) If necessary, replace R25 with the variable chip resistor NVP1301-472N and adjust it for 2.00 ± 0.06 Vp-p, as in Fig. 3-1-12.

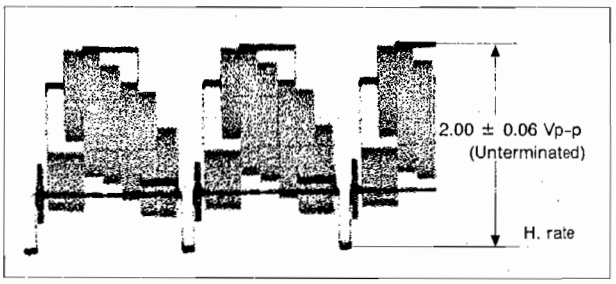


Fig. 3-1-12 PB Y level

6. REC colour level

Signal	·Colour bar
Mode	·SP ·REC
Equipment	·Oscilloscope
Measurement point	·CN2 pin 11 (REC COLOUR)
Adjustment part	·R52 (REC COLOUR LEVEL)
Specification	·200 ± 10 mVp-p

1) Connect an oscilloscope to CN2 pin 11.
2) Record the colour bar signal in SP mode.
3) Confirm that colour level is 200 ± 10 mV p-p, as in Fig. 3-1-13.
4) If necessary, replace R52 with the variable chip resistor NVP1301-222N and adjust it for 200 ± 10 mVp-p.

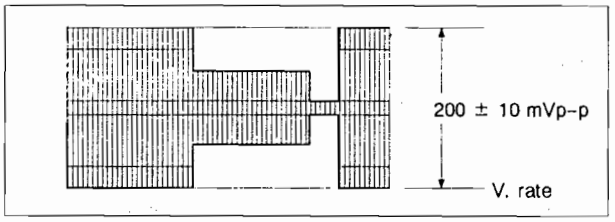


Fig. 3-1-13 REC colour level

3.1.5 TIMER CIRCUIT

Note: *Unless otherwise specified, all measurement points and adjustment parts are located on the MAIN BOARD.*

1. Timer clock

Signal	•No signal
Mode	•EE •AUX
Equipment	•Frequency counter
Measurement point	•IC601 pin 64
Adjustment part	•C614 (TIMER CLOCK)
Specification	•1024.008 ± 0.001 Hz (976.5549 ± 0.0010 μsec)

1) Connect the frequency counter to IC601 pin 64 and GND.
2) Connect a short wire between IC601 pin 21 and IC601 pin 63.
3) Short the leads of capacitor C616 once in order to reset IC601.
4) Adjust C614 for 1024.008 ± 0.001 Hz (976.5549 ± 0.0010 μsec).
5) Disconnect the short wire.

3.1.6 TUNER CIRCUIT

Note: *Unless otherwise specified, all measurement points and adjustment parts are located on the IF UNIT BOARD.*

1. RF AGC

Note: *Before the following adjustment,*

1) Connect a cable to ANT IN and terminate TV OUT with 75 ohms.

2) Set a TV channel signal generator as follows.

Video: 65 dBμ 75 Ω, colour bar 87.5 % modulation.

Audio: 55 dBμ 75 Ω, 1 kHz ± 50 kHz deviation.

〈Factory Method〉

Signal	•TV broadcasting
Mode	•Tuner
Equipment	•Oscilloscope •TV signal generator
Measurement point	•IF UNIT
Adjustment part	•IF VR
Specification	•-6.0 dB from maximum level (with minimum noise)

1) Connect an oscilloscope to IF terminal of U/V tuner (front end).
2) Adjust IF VR for maximum level, then adjust IF VR to reduce the IF level -6.0 dB from maximum level.

《Alternate Method》

Note: *Adjust IF VR (RF AGC) to correct for excess noise in the picture or when streaks cross interference occurs due to strong electrical fields.*

1) Adjust IF VR to minimize noise or streaks on the TV screen.
2) Adjust for noisy picture with strong signal. Then adjust until noise just disappears. Select other channels to confirm proper pick-up of channels.

SECTION 4
CHARTS AND DIAGRAMS

SCHEMATIC DIAGRAM NOTES

Safety precautions

The Components identified by the symbol ⚠ are critical for safety. For continued safety, replace safety critical components only with manufactures recommended parts.

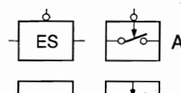
1. Schematic diagram values

Unless otherwise specified.

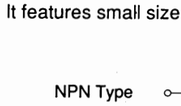
1) All resistance values are in ohms. 1/6 W, 1/8 W (refer to parts list).
   Chip resistors are 1/16 W.
   K: KΩ (1000Ω), M: MΩ (1000KΩ)
2) All capacitance values are in μF, (P: PF).
3) All inductance values in μH, (m: mH).
4) All diodes are 1SS133 or MA165, (refer to parts list).

2. Indications

AUX : Active only at high.
$\overline{AUX}$: Active only at low.

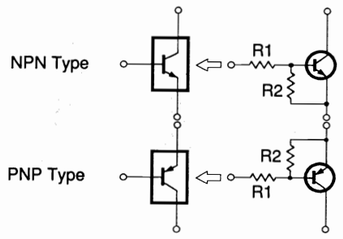


Active only at low for electronic switch.

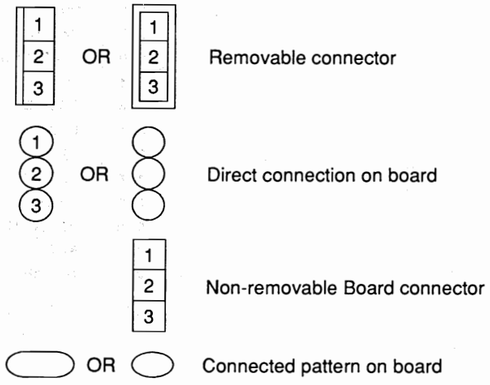


Active only at high for electronic switch.

Digital transistor :
The digital transistor includes built in resistors.
It features small size and high reliability.

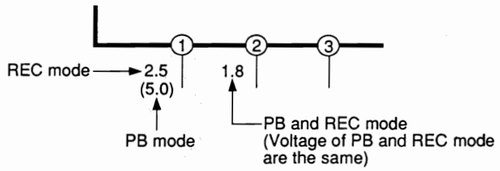


3. Interpreting Connector indications



4. Voltage measurement

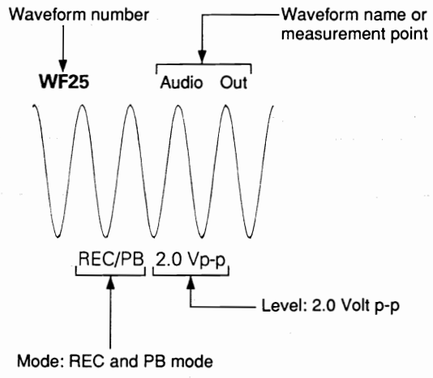
1) Voltage chart
   REC : Color bar signal in SP mode, normal VHS mode.
   PB : Alignment tape, color bar SP mode, normal VHS mode.
   — : Unmeasurable or unnecessary to measure.
2) Audio section
   REC : 1KHz, –8 dBs sine wave signal in SP mode, Normal VHS mode.
   PB : REC then playback it.
3) Movie Camera Section
   Measured using a correctly illuminated grey scale test chart in the E-E mode.
4) Schematic diagram
   Voltage Indications for REC and PB mode on Schematic are as shown below.



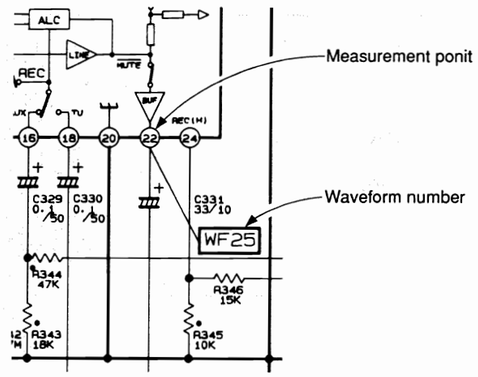
5. Waveform measurement

1) Waveform chart
   REC : Color bar signal in SP mode, normal VHS mode.
   PB : Alignment tape, color bar SP mode, normal VHS mode.
2) Audio Section
   REC : 1KHz, –8 dBs sine wave signal in SP mode, normal VHS mode.
   PB : REC then playback it.
3) Movie Camera Section
   Measured using a correctly illuminated grey scale test chart in the E-E mode.

Example:



4) Schematic diagram
   Waveform indications on schematic are as shown below.



6. Signal path Symbols

The arrows indicate the signal path as follows.

- Playback signal path
- Playback and recording signal path
- Recording signal path (including E-E signal path)
- Y signal path
- Color (Chroma) signal path
- R or R-Y signal path
- B or B-Y signal path
- Capstan servo path
- Drum servo path
- Reel servo path

CIRCUIT BOARD NOTES

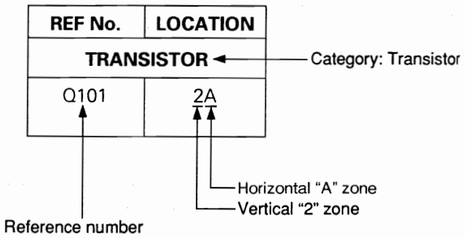
1. Color indications

1) Foil side :
   Foil side patterns are indicated at gray shading.
2) Component side :
   Component side patterns are indicated at RED shading.

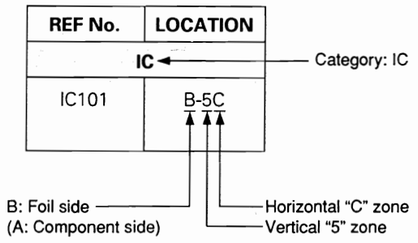
Notes:
Foil side (B side) ;
Parts on the foil side seen from foil face (pattern face) are indicated.
Component side (A side) ;
Parts on the component side seen from component face (parts face) are indicated.

2. Location of SMC indications

1) Single pattern :



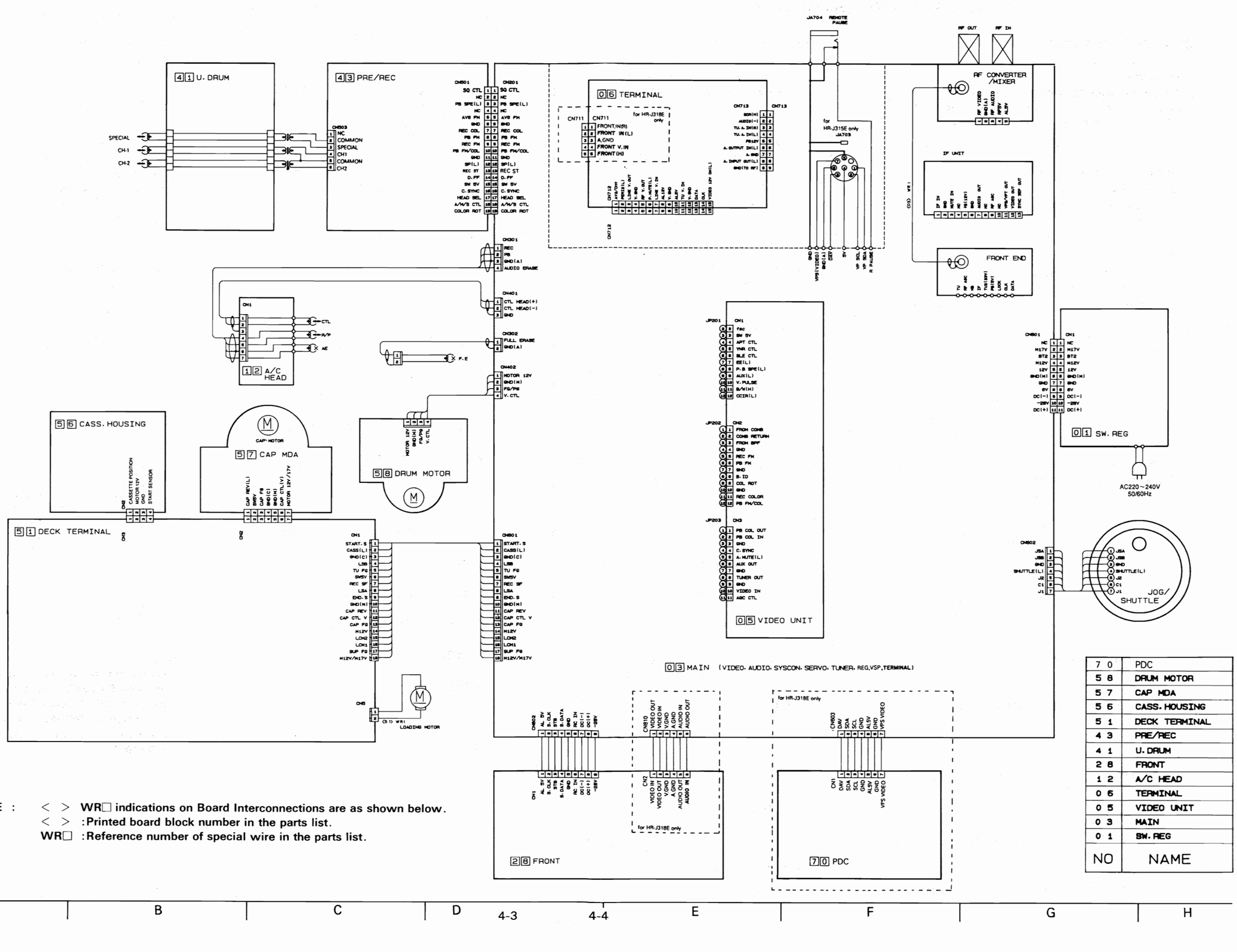
2) Double pattern :



Notes:
1) **For general information in service manual, please refer to the Service Manual of GENERAL INFORMATION No. 82054D (January 1994).**
2) **For repairing SMC (Surface Mounted Components), please refer to the VIDEO SERVICE GUIDE No. VTS81001.**

S40884

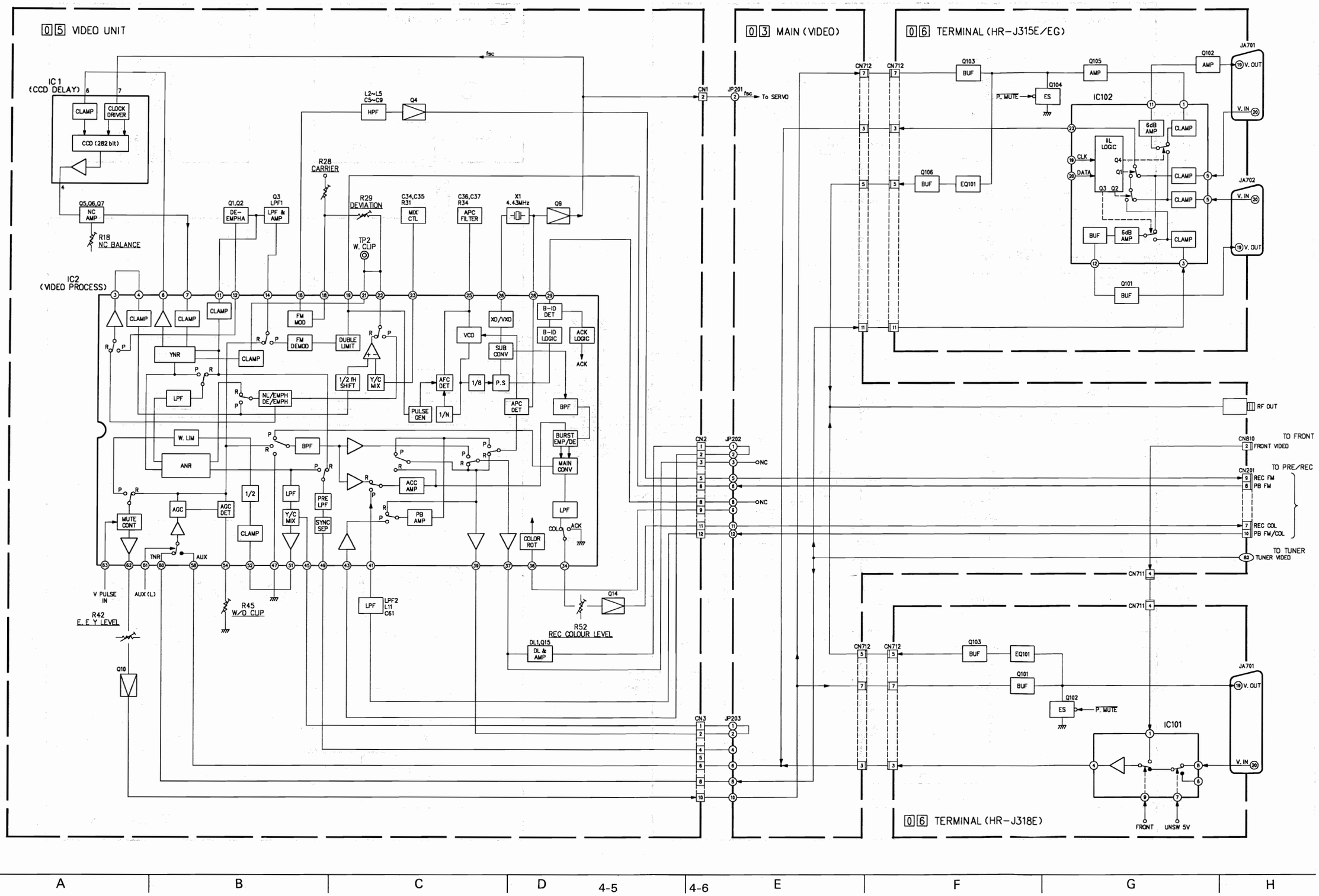
4.1 BOARD INTERCONNECTIONS



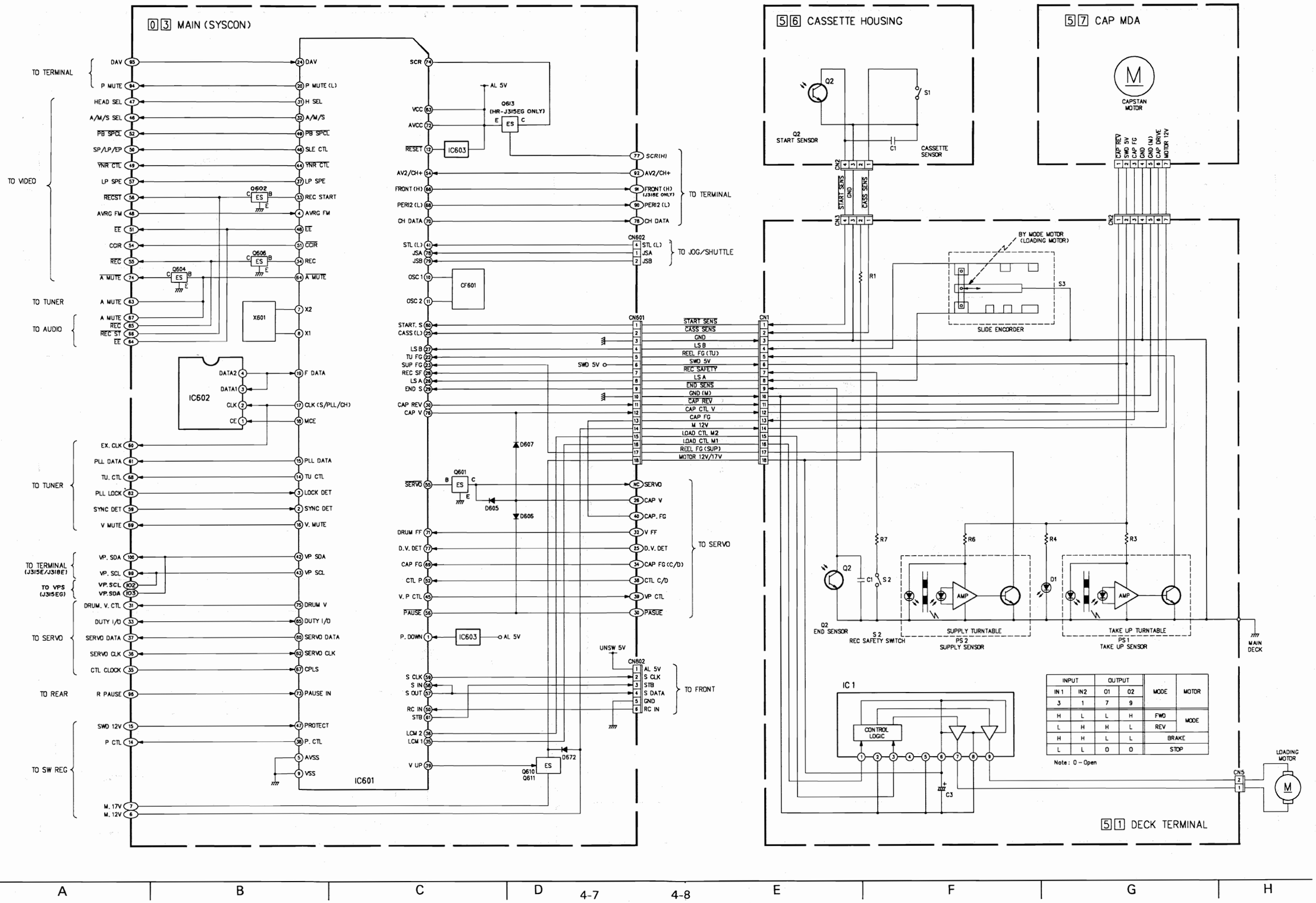
NO	NAME
70	PDC
58	DRUM MOTOR
57	CAP MDA
56	CASS. HOUSING
51	DECK TERMINAL
43	PRE/REC
41	U. DRUM
28	FRONT
12	A/C HEAD
06	TERMINAL
05	VIDEO UNIT
03	MAIN
01	SW. REG

NOTE : < > WR□ indications on Board Interconnections are as shown below.
< > : Printed board block number in the parts list.
WR□ : Reference number of special wire in the parts list.

4.2 VIDEO BLOCK DIAGRAM



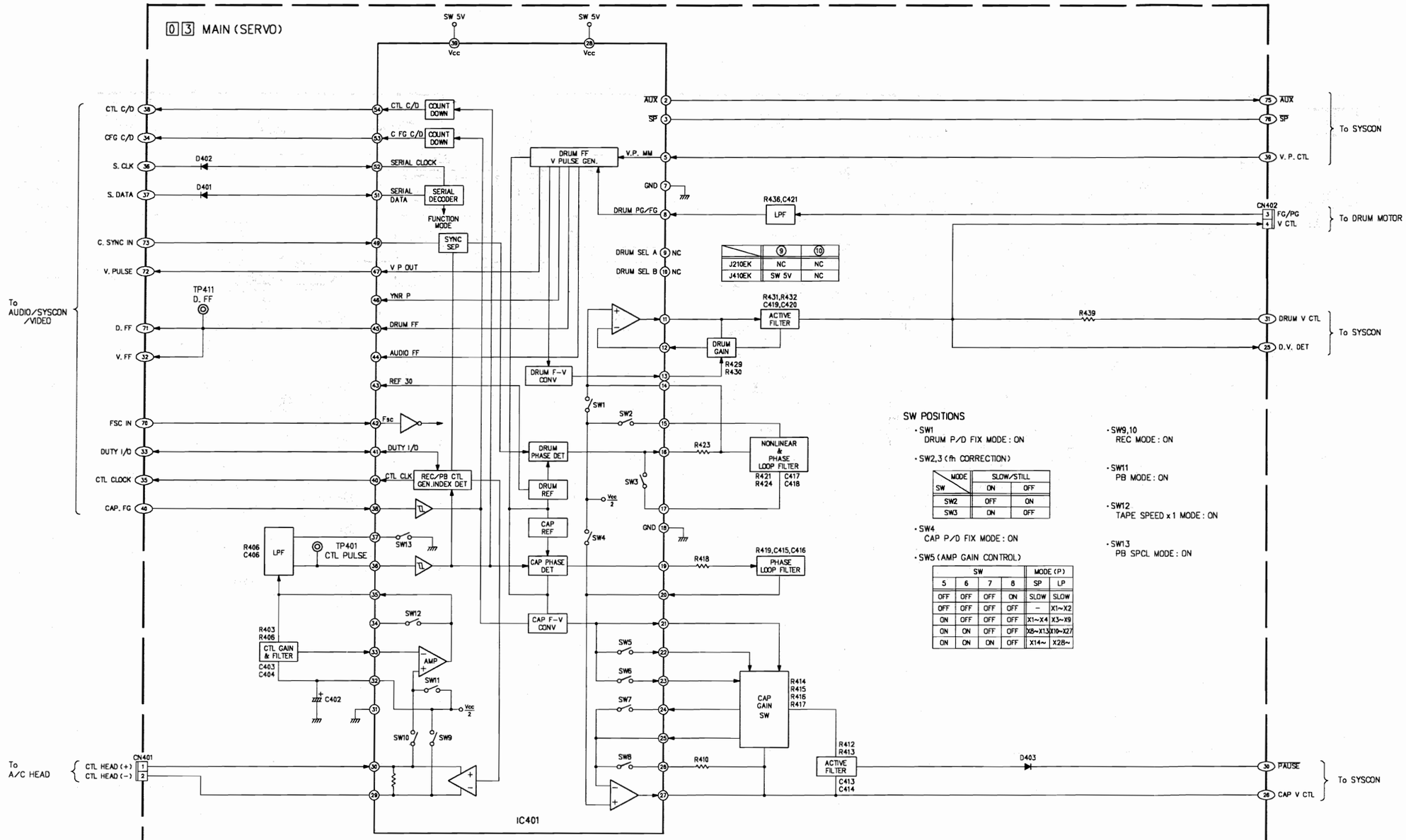
4.3 SYSCON BLOCK DIAGRAM



INPUT		OUTPUT		MODE	MOTOR
IN 1	IN2	O1	O2		
3	1	7	9		
H	L	L	H	FWD	MODE
L	H	H	L	REV	
H	H	L	L	BRAKE	
L	L	O	O	STOP	

Note: O – Open

4.4 SERVO BLOCK DIAGRAM

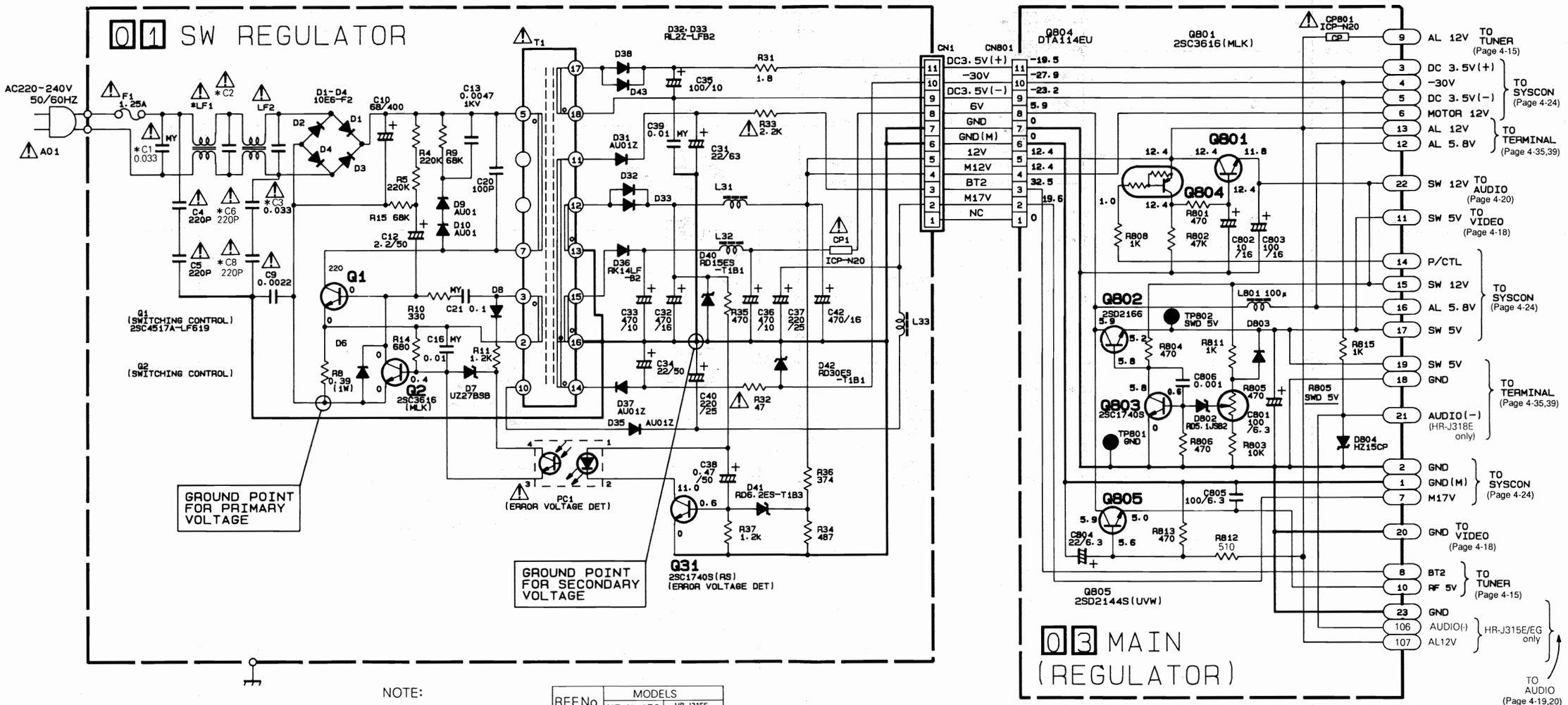


MODE / SW	SLOW/STILL ON	SLOW/STILL OFF
SW2	OFF	ON
SW3	ON	OFF

SW 5	6	7	8	MODE (P) SP	LP
OFF	OFF	OFF	ON	SLOW	SLOW
OFF	OFF	OFF	OFF	–	X1~X2
ON	OFF	OFF	OFF	X1~X4	X3~X9
ON	ON	OFF	OFF	X8~X13	X10~X27
ON	ON	ON	OFF	X14~	X28~

	⑨	⑩
J210EK	NC	NC
J410EK	SW 5V	NC

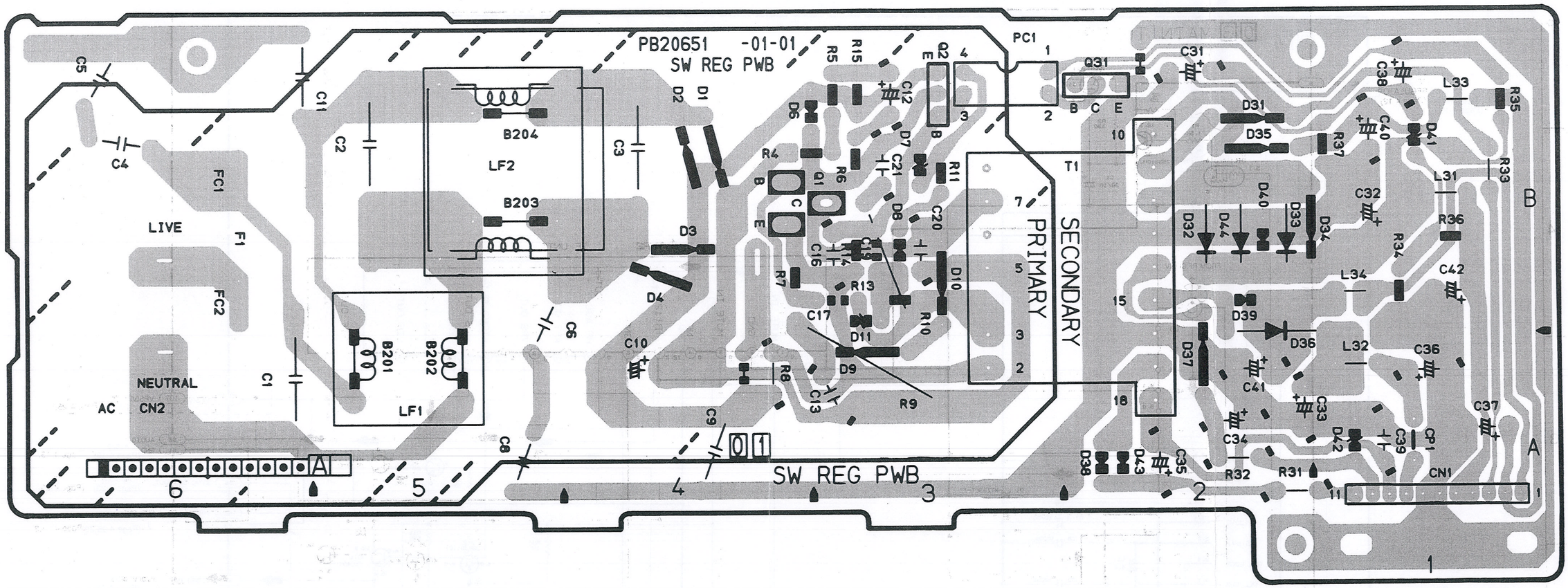
4.5 SWITCHING REGULATOR & REGULATOR SCHEMATIC DIAGRAMS



NOTE:
COMPARISON CHART OF MODELS & MARKS (*)

REF.No.	MODELS	
	HR-J315EG	HR-J315E HR-J318E
C1	USED	OPEN
C2	0.033	0.068
C3	OPEN	USED
C6	OPEN	USED
C8	OPEN	USED
LF1	USED	SHORT

4.6 SWITCHING REGULATOR CIRCUIT BOARD



MAIN CONPONENT PARTS LOCATION GUIDE

<SW REG PWB>

REF. No.	LOCATION
TRANSISTOR	
Q1	3B
Q2	3B
Q31	2B

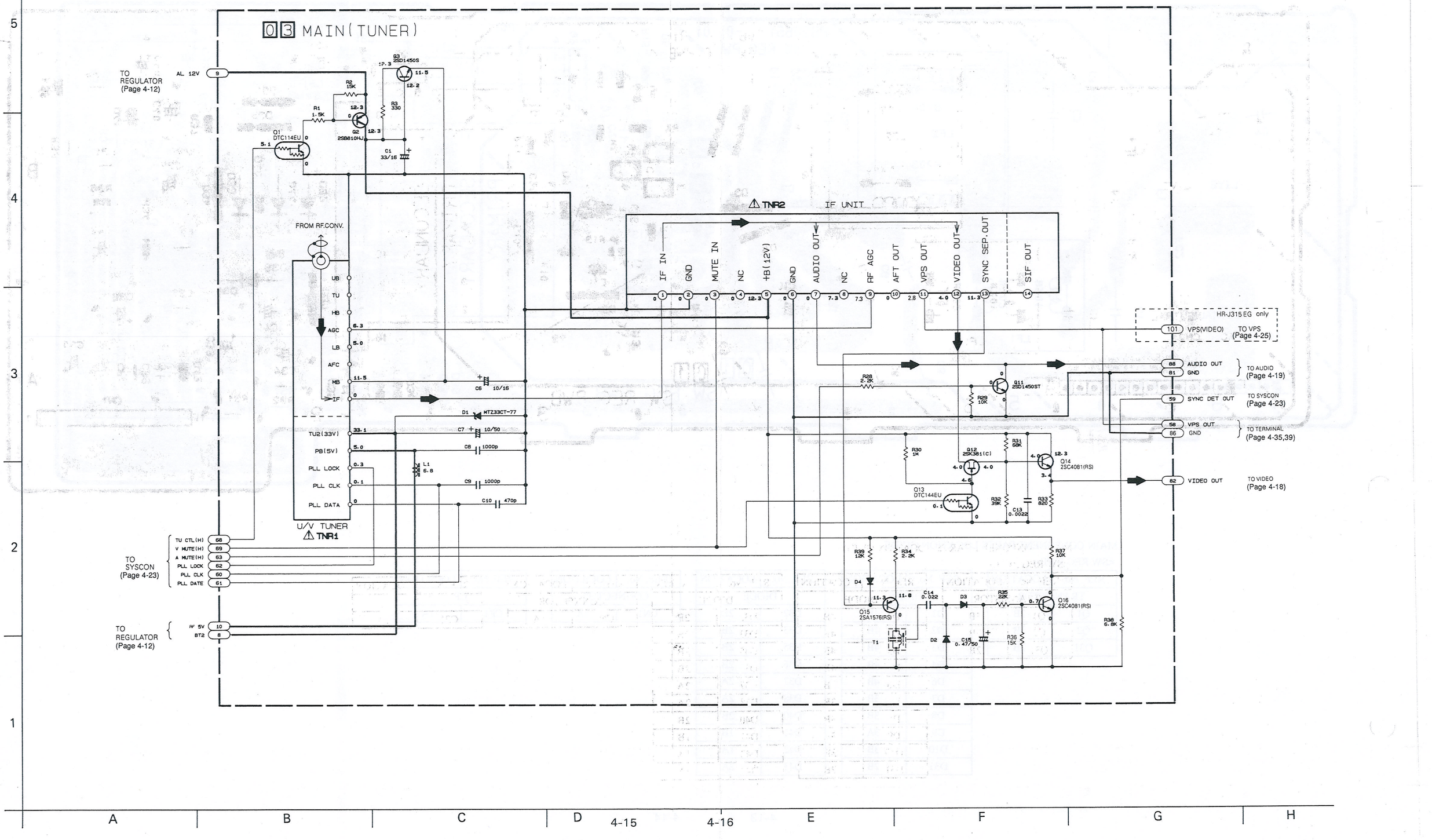
REF. No.	LOCATION
DIODE	
D1	4B
D2	4B
D3	4B
D4	4B
D6	4B
D7	3B
D8	3B
D9	3A
D10	3B
D31	2B

REF. No.	LOCATION
DIODE	
D32	2B
D33	2B
D35	2B
D36	2B
D37	2A
D38	2A
D40	2B
D41	1B
D42	1A
D43	2A

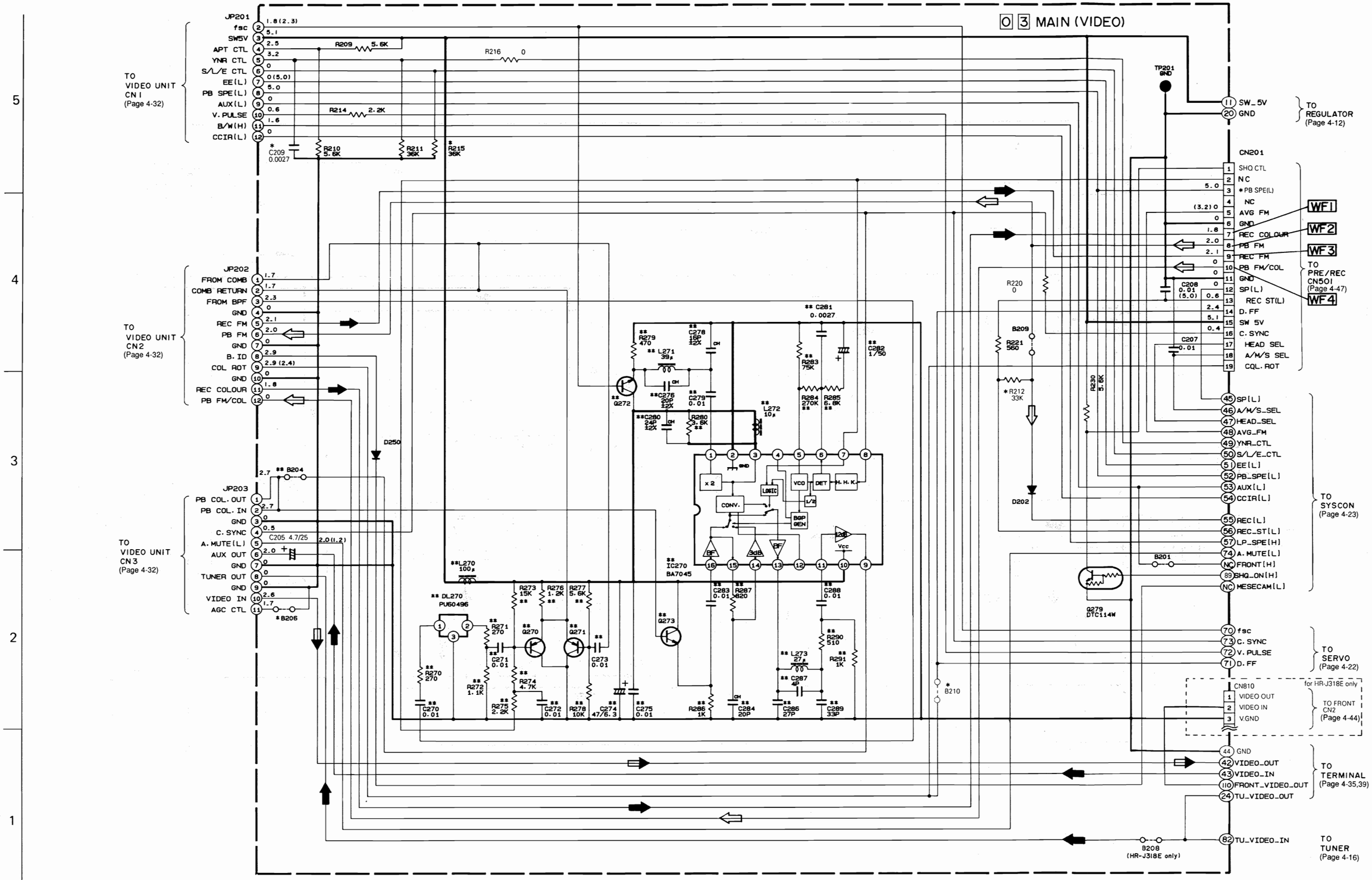
REF. No.	LOCATION
CONNECTOR	
CN1	1A

REF. No.	LOCATION
CP	
CP1	1A

4.7 TUNER SCHEMATIC DIAGRAM

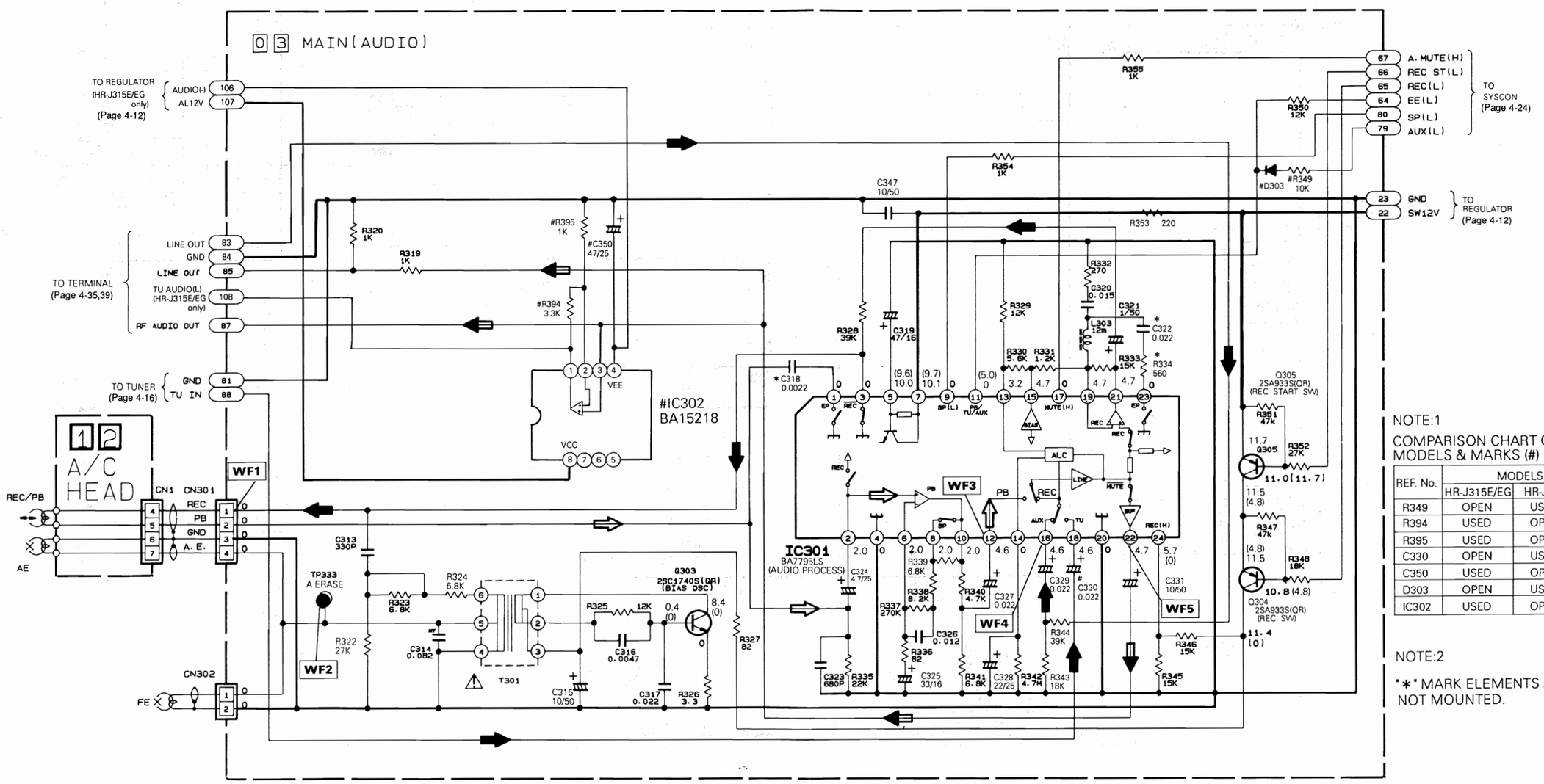


4.8 VIDEO SCHEMATIC DIAGRAM



NOTE: '*' AND '**' MARK ELEMENTS ARE NOT MOUNTED.

4.9 AUDIO SCHEMATIC DIAGRAM



NOTE:1

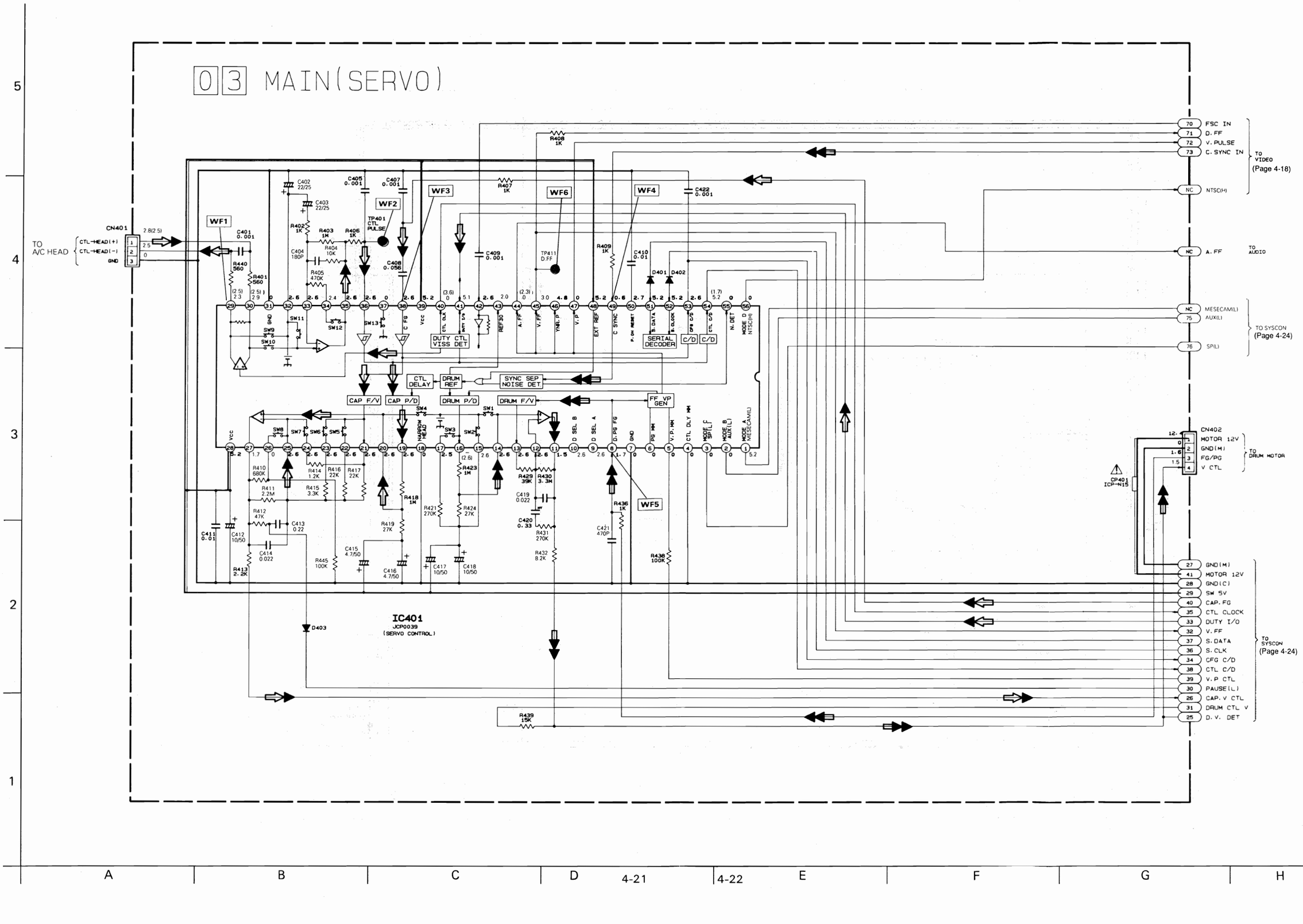
COMPARISON CHART OF MODELS & MARKS (#)

REF. No.	MODELS	
	HR-J315E/EG	HR-J318E
R349	OPEN	USED
R394	USED	OPEN
R395	USED	OPEN
C330	OPEN	USED
C350	USED	OPEN
D303	OPEN	USED
IC302	USED	OPEN

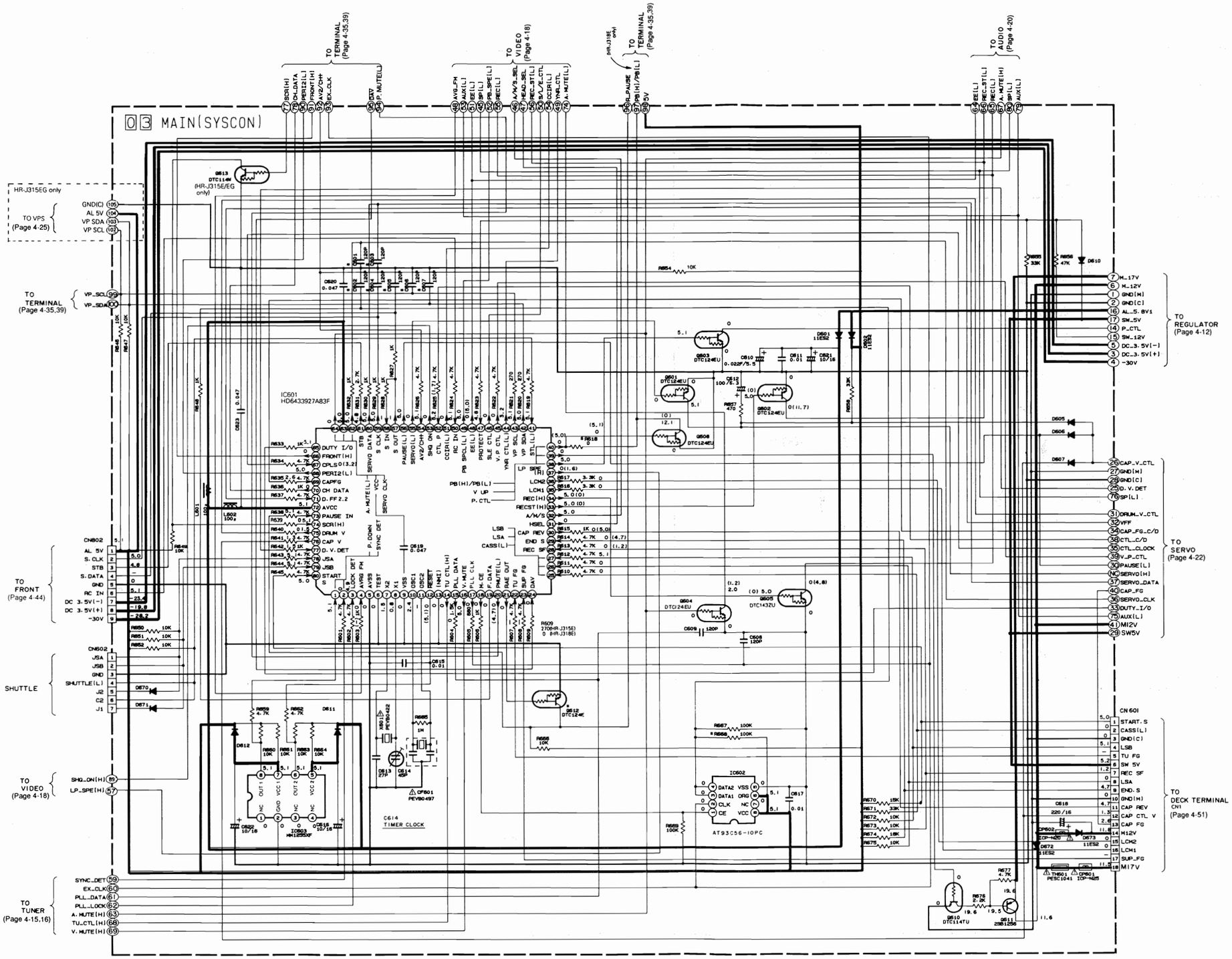
NOTE:2

"*" MARK ELEMENTS ARE NOT MOUNTED.

4.10 SERVO SCHEMATIC DIAGRAM

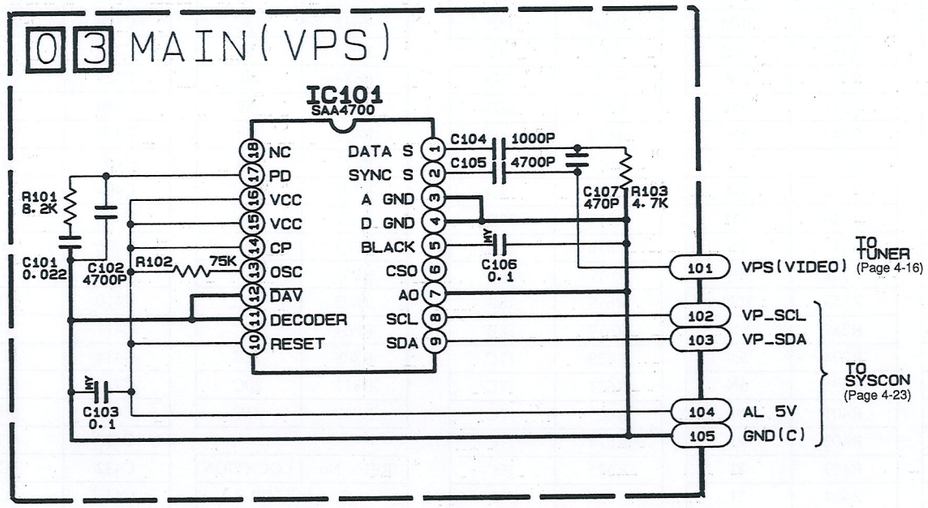


4.11 SYSTEM CONTROL SCHEMATIC DIAGRAM



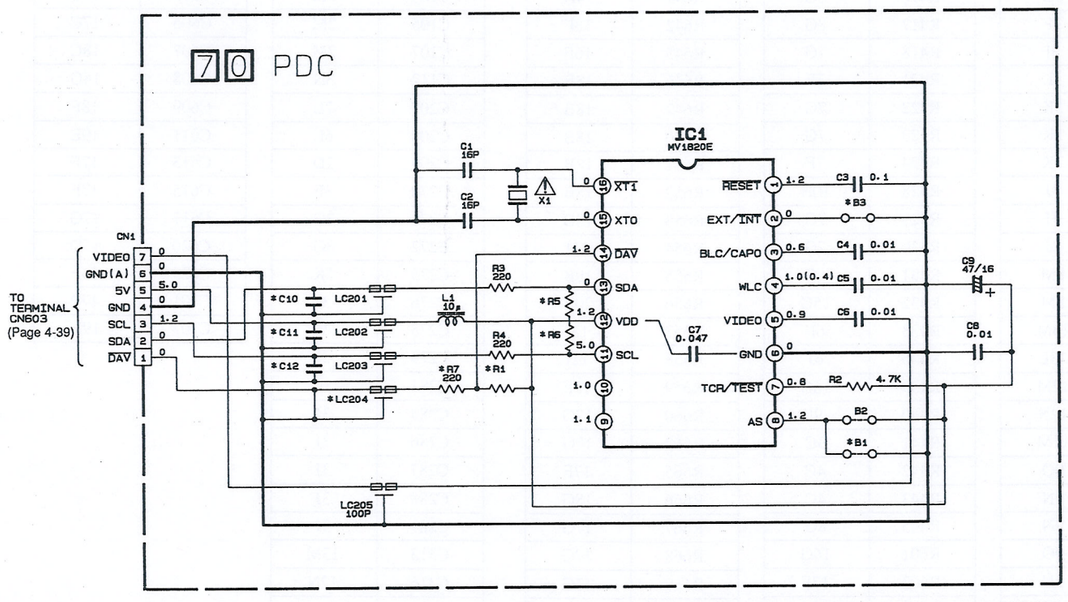
4.12 VPS & PDC SCHEMATIC DIAGRAMS AND PDC CIRCUIT BOARD

—VPS— (for HR-J315EG)



S45053

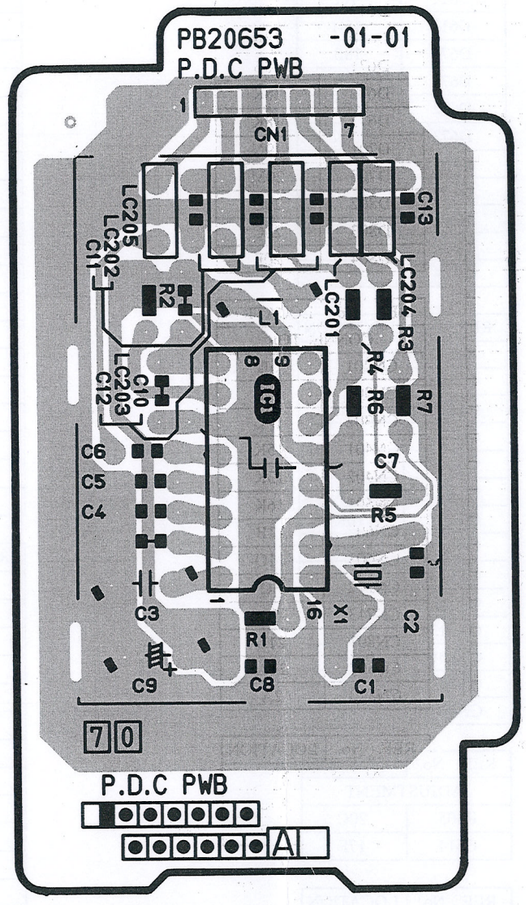
—PDC— (for HR-J318E)



NOTE : "*" MARK ELEMENTS ARE NOT MOUNTED.

S35242

PDC CIRCUIT BOARD
—for HR-J318E—



4.13 MAIN CIRCUIT BOARD

MAIN CONPONENT PARTS LOCATION GUIDE

<MAIN PWB>

REF. No.	LOCATION
IC	
IC301	9M
IC302	5M
IC401	6H
IC601	17E
IC602	17G
IC603	16G

REF. No.	LOCATION
TRANSISTOR	
Q1	19M
Q2	19M
Q3	17M
Q11	13N
Q12	15N
Q13	15M
Q14	15N
Q15	14N
Q16	13N
Q279	5K
Q303	11N
Q304	8N
Q305	7N
Q601	16C
Q602	14J
Q603	18C
Q604	15F
Q605	15J
Q608	18C
Q610	19I
Q611	17J
Q701	19N
Q702	19M
Q801	21C
Q802	20D
Q803	20D
Q804	21E
Q805	21C

REF. No.	LOCATION
DIODE	
D1	17M
D2	14N
D3	13N
D4	14N
D201	7K
D202	6K
D250	4F
D303	8O
D401	10I

REF. No.	LOCATION
DIODE	
D402	10I
D403	15C
D601	19E
D602	19E
D605	16B
D606	16B
D607	15H
D610	19B
D611	16I
D612	15H
D670	18B
D671	18B
D672	18K
D673	18K
D701	19N
D703	20M
D802	20C
D803	20C
D804	20F

REF. No.	LOCATION
CONNECTOR	
CN201	5L
CN301	14L
CN302	14L
CN401	15K
CN402	13K
CN601	16K
CN602	21B
CN603	11O
CN712	3O
CN713	6O
CN801	21E
CN802	21A
CN810	2A

REF. No.	LOCATION
ADJUSTMENT	
R805	20C
C614	17F

REF. No.	LOCATION
TEST POINT	
TP201	4M
TP333	12L
TP401	2D
TP411	3E
TP801	22C
TP802	20B

REF. No.	LOCATION
CP	
CP401	13K
CP601	17J
CP602	18K
CP801	21E

LEADLESS COMPONENT PARTS LOCATION GUIDE

<MAIN PWB>

REF. No.	LOCATION
IC	
IC601	17E
IC602	16G

REF. No.	LOCATION
TRANSISTOR	
Q1	19M
Q13	15M
Q14	15N
Q15	14N
Q16	13N
Q274	4K
Q275	5K
Q276	5K
Q277	5K
Q279	5K
Q601	16C
Q602	14J
Q603	18C
Q604	15F
Q605	15J
Q608	18C
Q610	19I
Q612	17H
Q613	15G
Q804	21E

REF. No.	LOCATION
RESISTOR	
R1	19M
R2	19M
R3	17M
R28	13N
R29	13N
R30	15N
R31	15N
R32	15N
R33	15N
R34	14N
R35	13N

REF. No.	LOCATION
RESISTOR	
R36	13N
R37	15M
R38	14M
R39	14M
R101	2N
R102	3N
R103	3M
R209	2F
R210	1F
R211	1F
R212	6K
R214	2G
R215	1F
R216	10G
R220	7L
R221	6L
R230	5L
R231	5L
R232	5L
R270	3F
R271	3F
R272	3F
R273	3G
R274	3G
R275	3F
R276	3G
R278	2F
R279	3I
R283	3L
R284	3K
R285	3K
R286	2K
R287	3J
R290	3J
R291	2J
R319	8M
R320	8M
R322	13M
R323	13L
R324	12M
R325	12N
R326	11M
R329	9O
R330	9N
R331	9N
R332	9O
R333	9N
R334	8N

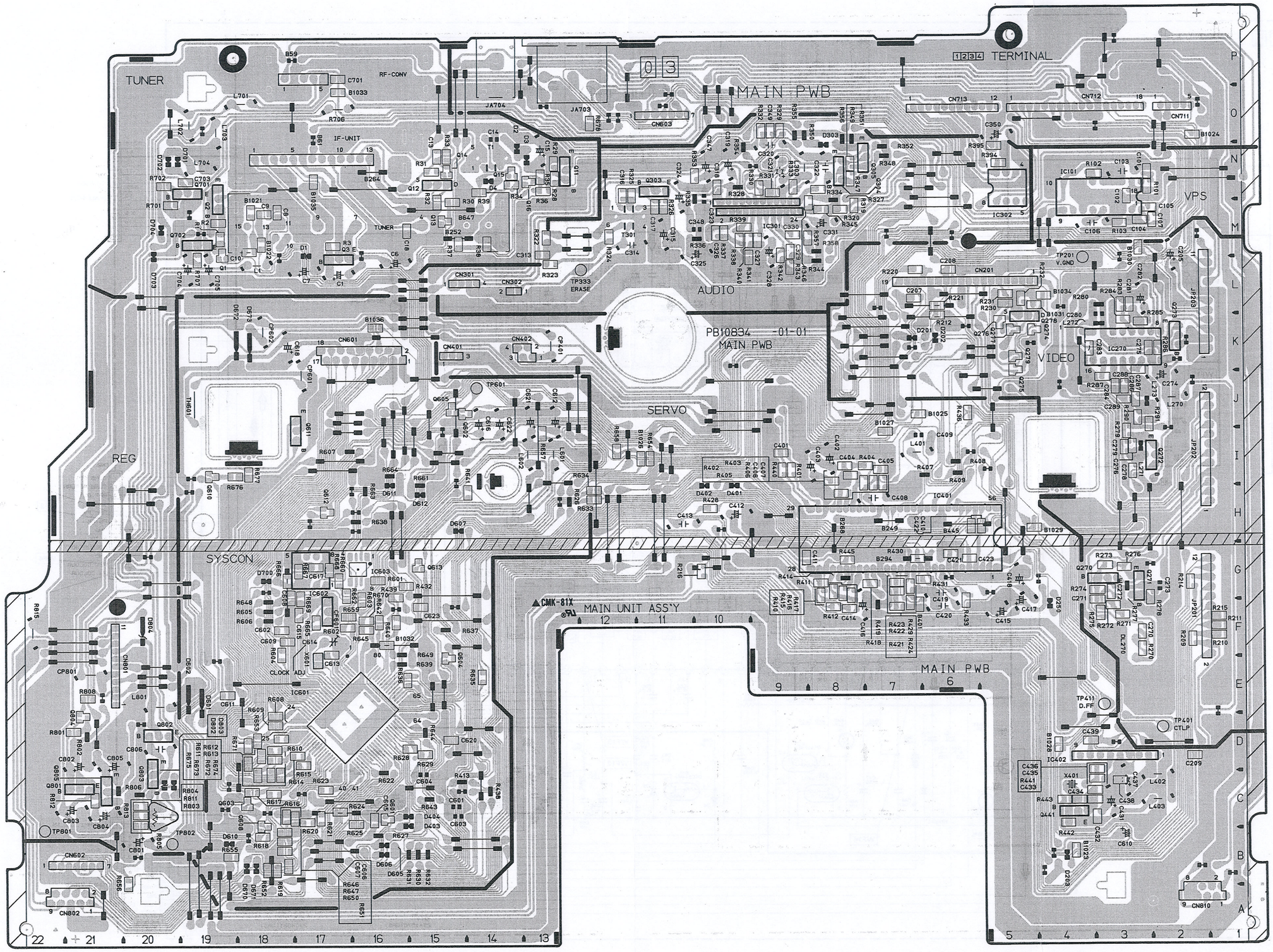
REF. No.	LOCATION
RESISTOR	
R337	10M
R338	10M
R339	10M
R340	9M
R341	9M
R342	9M
R343	9L
R345	8M
R346	8M
R347	8N
R351	8N
R353	10N
R357	8M
R394	5N
R395	5N
R401	9I
R402	8I
R403	8I
R404	7I
R405	8H
R406	8I
R410	8G
R411	8G
R412	8F
R415	8G
R416	8G
R417	8G
R418	7G
R421	7F
R422	7G
R423	7G
R424	7F
R428	10H
R429	7G
R430	7G
R431	6G
R432	15G
R433	6F
R436	6J
R439	16G
R440	9I
R441	3C
R442	4C
R443	4C
R445	8G
R601	16G
R602	17F
R603	16G

REF. No.	LOCATION
RESISTOR	
R604	18F
R608	18E
R609	18D
R610	18D
R611	18D
R612	18D
R613	18D
R614	17D
R615	17D
R616	18C
R617	18C
R618	18B
R619	18B
R620	17C
R621	17C
R623	17C
R624	17C
R625	16C
R628	15D
R629	15D
R633	12H
R634	12H
R635	14E
R636	16E
R640	16F
R641	14H
R642	16F
R645	16F
R646	18B
R647	18B
R650	18B
R651	18B
R652	18B
R653	18D
R654	11I
R655	19B
R656	20B
R657	13I
R658	12I
R659	17F
R660	17G
R662	17G
R665	17F
R666	18G
R667	17G
R668	17G
R669	17G
R670	16F

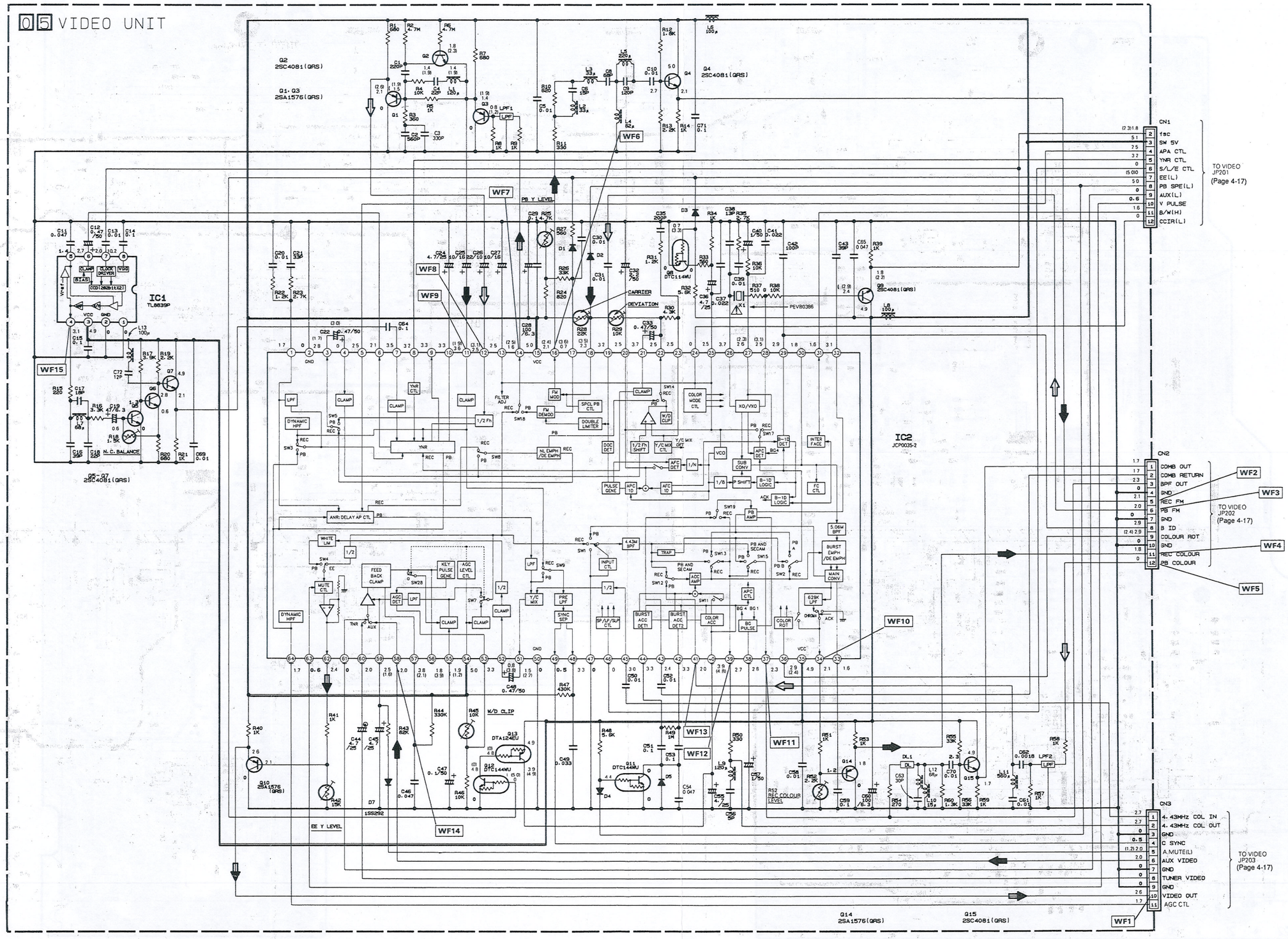
REF. No.	LOCATION
RESISTOR	
R671	18D
R672	18C
R673	18C
R674	18C
R675	18D
R676	19I
R677	18I
R701	20M
R702	20N
R707	19L
R801	21D
R803	20C
R804	20C
R808	21E
R811	20C
R812	21C

REF. No.	LOCATION
CAPACITOR	
C8	18M
C9	18M
C10	18M
C13	15N
C18	15M
C101	3N
C104	3M
C105	2M
C107	2M
C112	3N
C207	7L
C208	6L
C209	2D
C270	3F
C271	3G
C272	3G
C275	3K
C276	3I
C278	3I
C279	3I
C281	3L
C284	3J
C286	3J
C287	3J
C288	3J
C289	3J
C313	13M
C316	12N
C317	11M

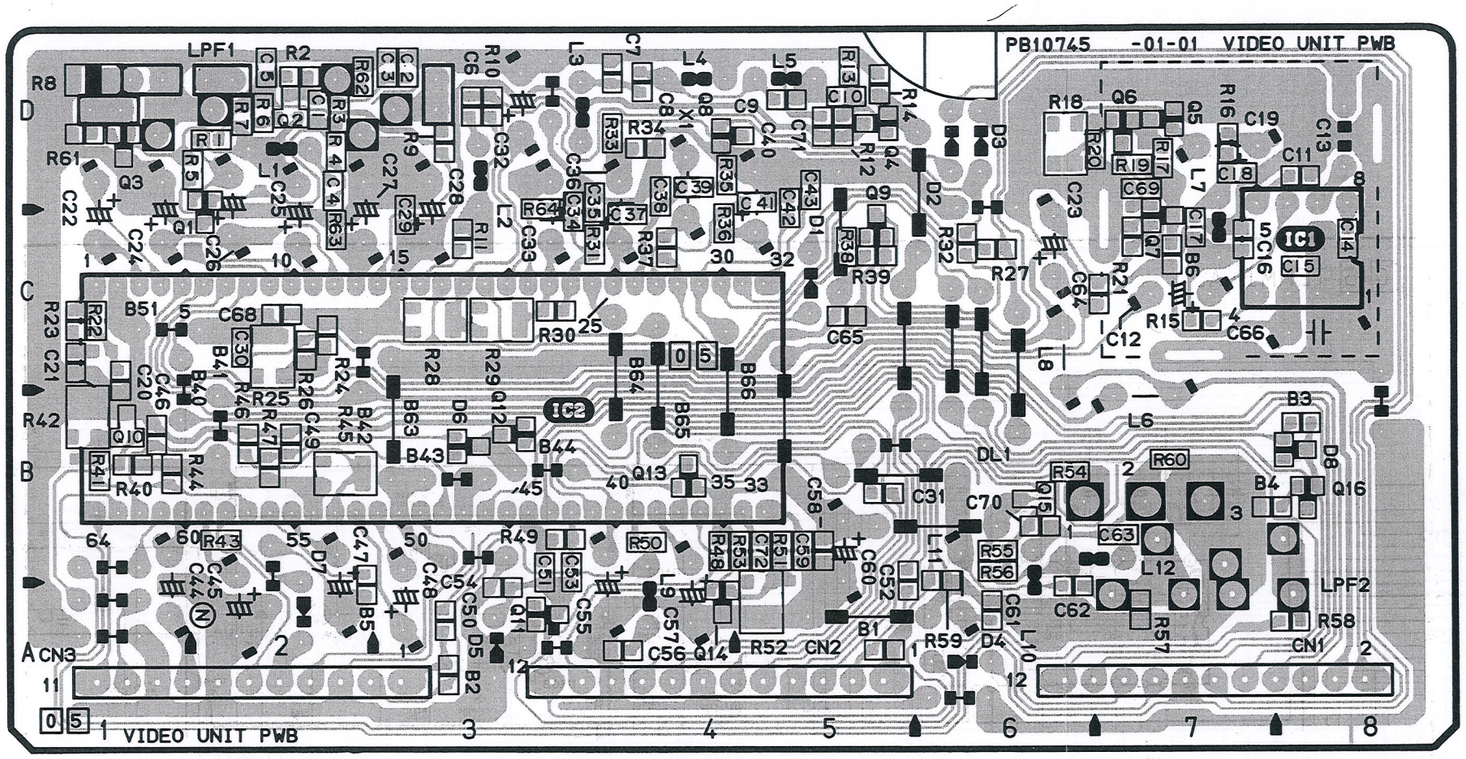
REF. No.	LOCATION
CAPACITOR	
C318	10N
C326	10M
C327	9M
C329	9M
C330	9M
C349	9O
C401	9I
C404	8I
C405	7I
C406	7I
C407	7I
C410	5H
C411	8G
C414	8F
C421	6G
C422	6H
C423	6G
C432	3C
C433	4C
C434	4C
C435	3C
C436	3D
C438	3C
C439	4D
C602	18F
C605	16C
C606	17C
C607	18C
C608	18G
C609	18F
C611	19E
C613	17F
C615	17F
C617	17G
C620	15D
C623	15F
C701	17P
C703	19N


TUNER
RF-CONV
IF-UNIT
TUNER
MAIN PWB
TERMINAL
VPS
AUDIO
PB10834 -01-01
MAIN PWB
VIDEO
SERVO
REG
SYSCON
CLOCK ADJ
CMK-81X
MAIN UNIT ASS'Y
MAIN PWB

4.14 VIDEO UNIT SCHEMATIC DIAGRAM



4.15 VIDEO UNIT CIRCUIT BOARD



MAIN CONPONENT PARTS LOCATION GUIDE

<VIDEO UNIT PWB>

REF. No.	LOCATION
IC	
IC1	8C
IC2	4B

REF. No.	LOCATION
TRANSISTOR	
Q1	2D
Q2	2D
Q3	1D
Q4	5D
Q5	7D
Q6	7D
Q7	7C
Q8	4D
Q9	5C
Q10	1B
Q11	3A
Q12	3B
Q13	4B
Q14	4A
Q15	6B

REF. No.	LOCATION
DIODE	
D1	5C
D2	6D
D3	6D
D4	6A
D5	3A
D7	2A

REF. No.	LOCATION
CONNECTOR	
CN1	8A
CN2	5A
CN3	1A

REF. No.	LOCATION
ADJUSTMENT	
R18	6D
R25	2C
R28	3C
R29	3C
R42	1B
R45	2B
R52	5A

LEADLESS COMPONENT PARTS LOCATION GUIDE

<VIDEO UNIT PWB>

REF. No.	LOCATION
TRANSISTOR	
Q1	2D
Q2	2D
Q3	1D
Q4	5D
Q5	7D
Q6	7D
Q7	7C
Q8	4D
Q9	5C
Q10	1B
Q11	3A
Q12	3B
Q13	4B
Q14	4A
Q15	6B
Q16	8B

REF. No.	LOCATION
DIODE	
D6	3B

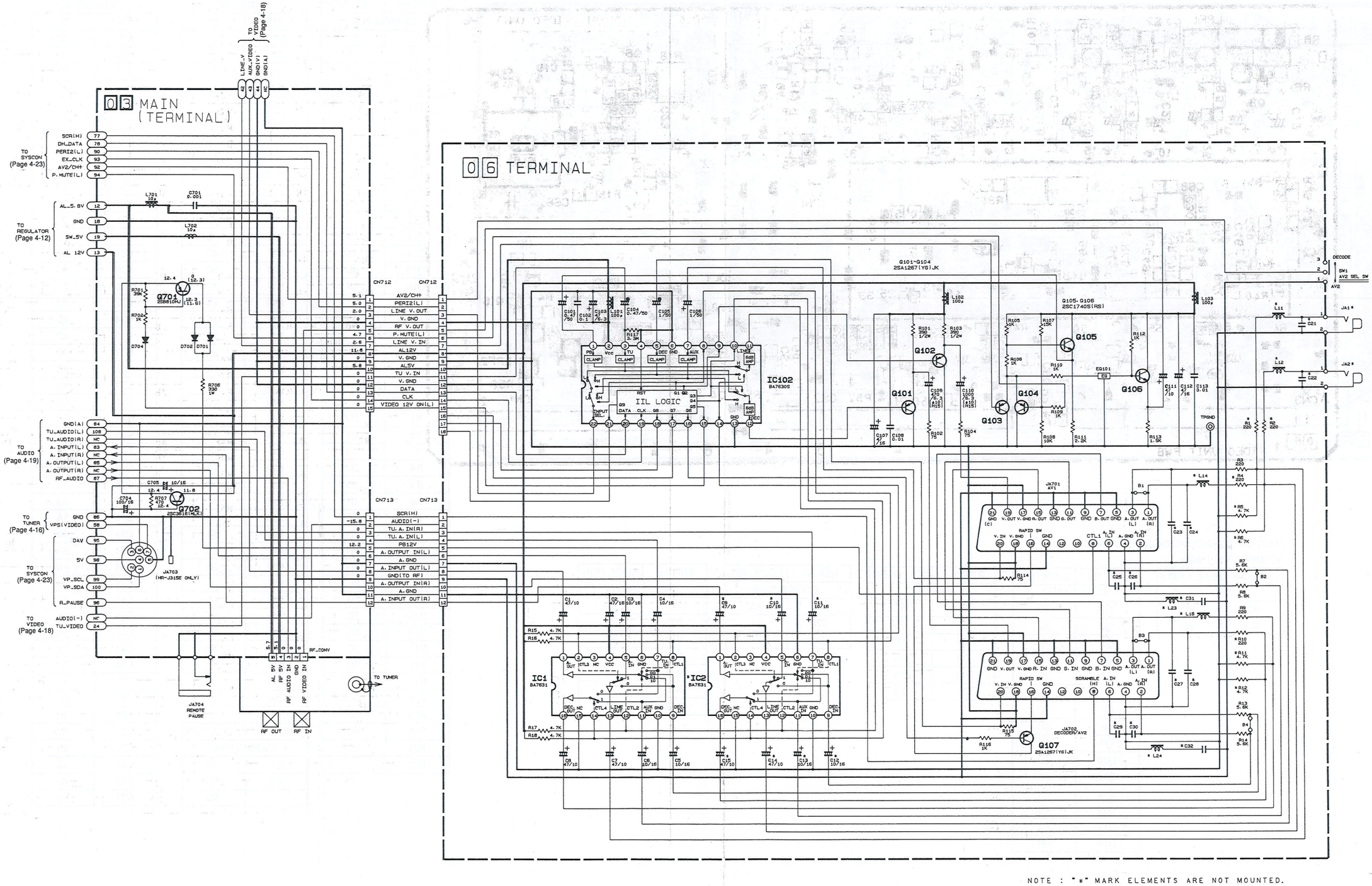
REF. No.	LOCATION
RESISTOR	
R1	2D
R2	2D
R3	2D
R4	2D
R5	2D
R6	2D
R7	2D
R8	1D
R9	3D
R10	3D
R11	3C
R12	5D
R13	5D
R14	5D
R15	7C
R16	7D
R17	7D
R18	6D
R19	7D
R20	6D
R21	7C
R22	1C

REF. No.	LOCATION
RESISTOR	
R23	1C
R24	2C
R25	2C
R26	2C
R27	6C
R28	3C
R29	3C
R30	3C
R31	4C
R32	6C
R33	4D
R34	4D
R35	4D
R36	4C
R37	4C
R38	5C
R39	5C
R40	1B
R41	1B
R42	1B
R43	2A
R44	1B
R45	2B
R46	2B
R47	2B
R48	4B
R49	4B
R50	4B
R51	5B
R52	5A
R53	5B
R54	6B
R55	6B
R56	6B
R57	7A
R58	8A
R59	6A
R60	7B
R61	1D
R62	2C
R63	3D
R64	3C

REF. No.	LOCATION
CAPACITOR	
C1	2D
C2	2D
C3	3D

REF. No.	LOCATION
CAPACITOR	
C4	2D
C5	2D
C6	3D
C7	4D
C8	4D
C9	5D
C10	5D
C11	8D
C14	8C
C15	8C
C16	7C
C17	7C
C18	7D
C20	1C
C21	1C
C29	3C
C30	2C
C31	5B
C34	4D
C35	4D
C37	4C
C38	4D
C39	4D
C41	5D
C42	5D
C43	5D
C46	1B
C49	2B
C50	3A
C51	3B
C52	5A
C53	4B
C54	3A
C56	4A
C58	5B
C59	5B
C61	6A
C62	6A
C63	7B
C64	7C
C65	5C
C67	8C
C68	2C
C69	7D
C70	6B
C71	5D
C72	7D
C73	5B

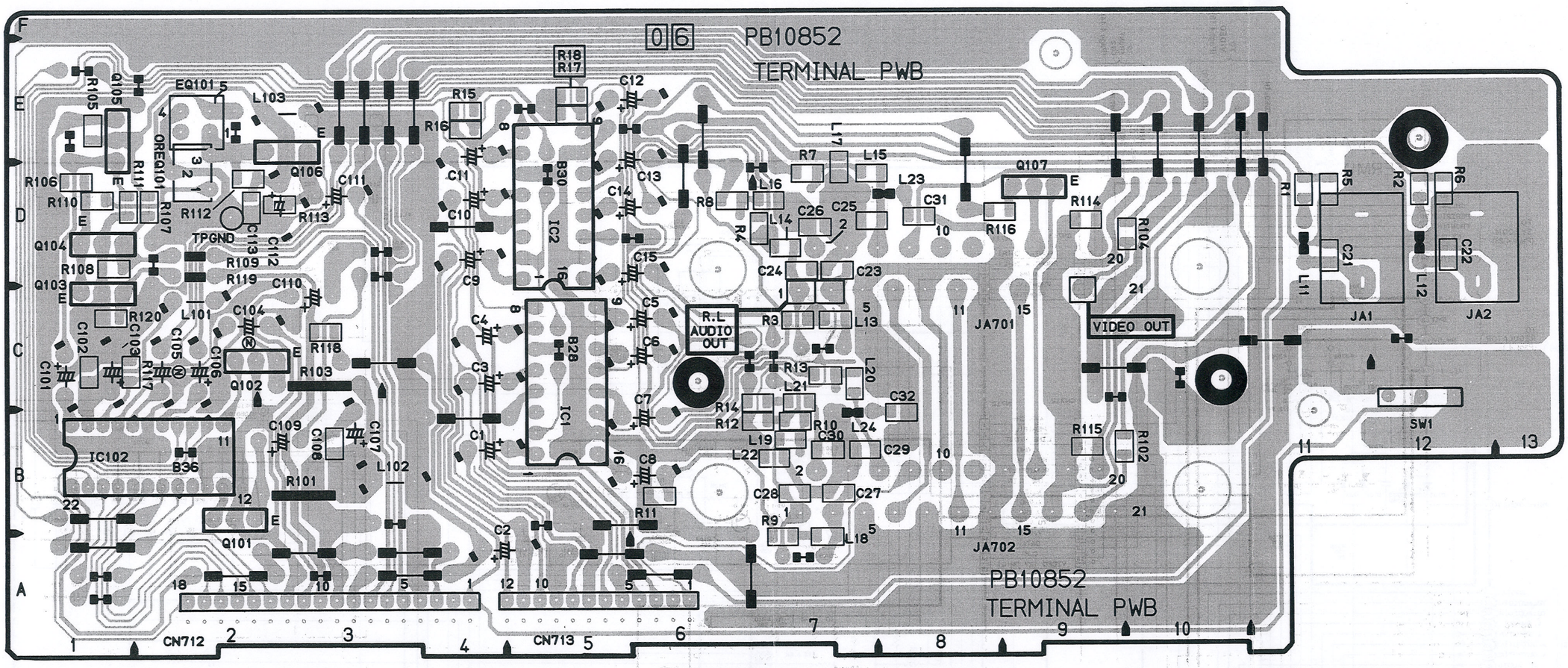
4.16 TERMINAL & MAIN (TERMINAL) SCHEMATIC DIAGRAMS (for HR-J315E/EG)



NOTE : "*" MARK ELEMENTS ARE NOT MOUNTED.

S16083

4.17 TERMINAL CIRCUIT BOARD (for HR-J315E/EG)



MAIN COMPONENT PARTS LOCATION GUIDE
<TERMINAL PWB>

REF. No.	LOCATION
IC	
IC1	5B
IC102	1B

REF. No.	LOCATION
CONNECTOR	
CN712	2A
CN713	5A

REF. No.	LOCATION
TRANSISTOR	
Q101	2B
Q102	2C
Q103	1C
Q104	1D
Q105	1E
Q106	3E
Q107	9D

LEADLESS COMPONENT PARTS LOCATION GUIDE
<TERMINAL PWB>

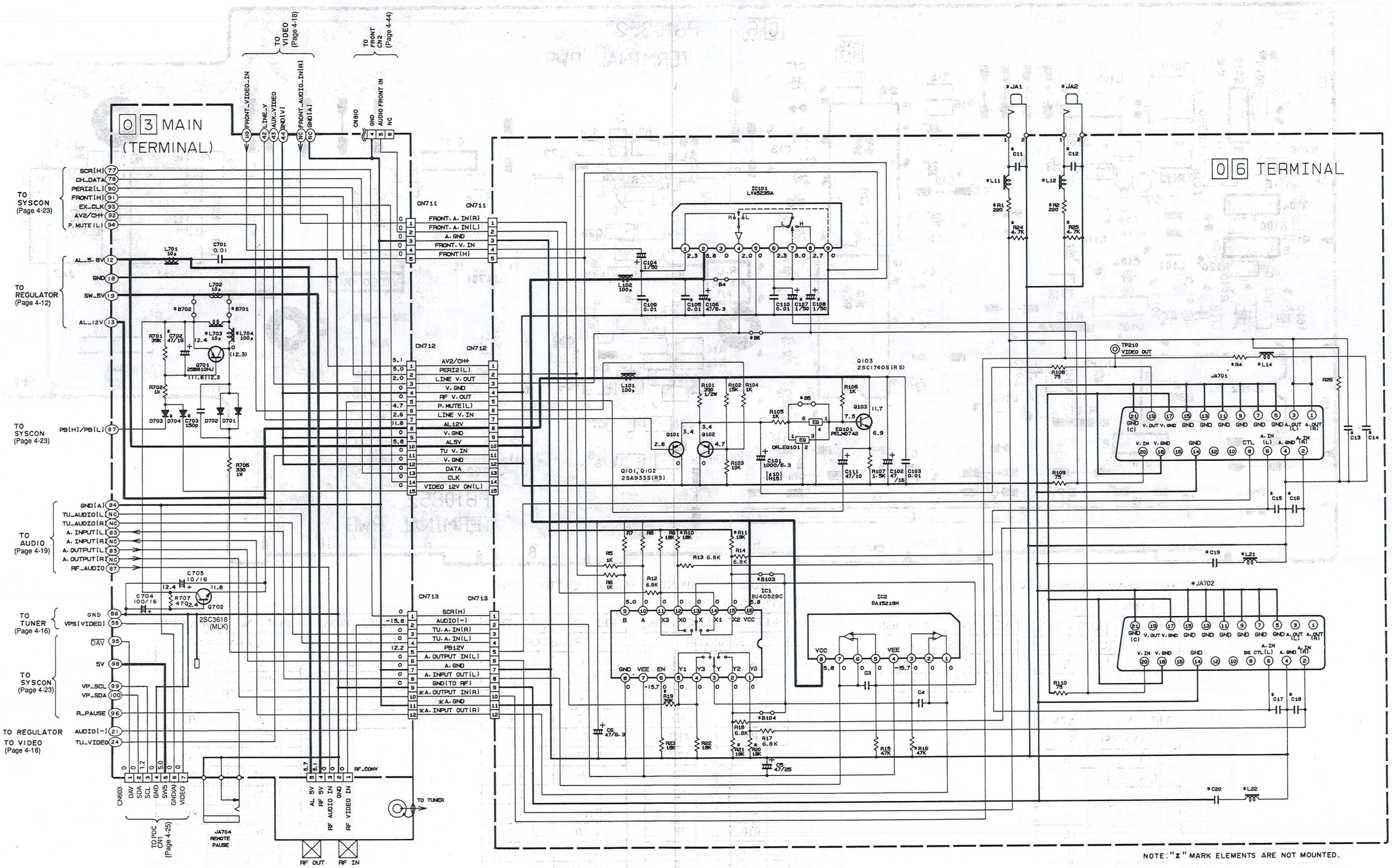
REF. No.	LOCATION
RESISTOR	
R1	11D
R2	12D
R3	7C
R4	6D
R5	11D
R6	12D
R7	7D
R8	6D
R9	7A
R10	7B
R11	6B
R12	6B
R13	7C
R14	6B
R15	4E

REF. No.	LOCATION
RESISTOR	
R16	4E
R17	5E
R18	5E
R102	10B
R104	10D
R105	1E
R106	1D
R107	2D
R108	1D
R110	1D
R111	2D
R112	2D
R113	3D
R114	9D
R115	9B

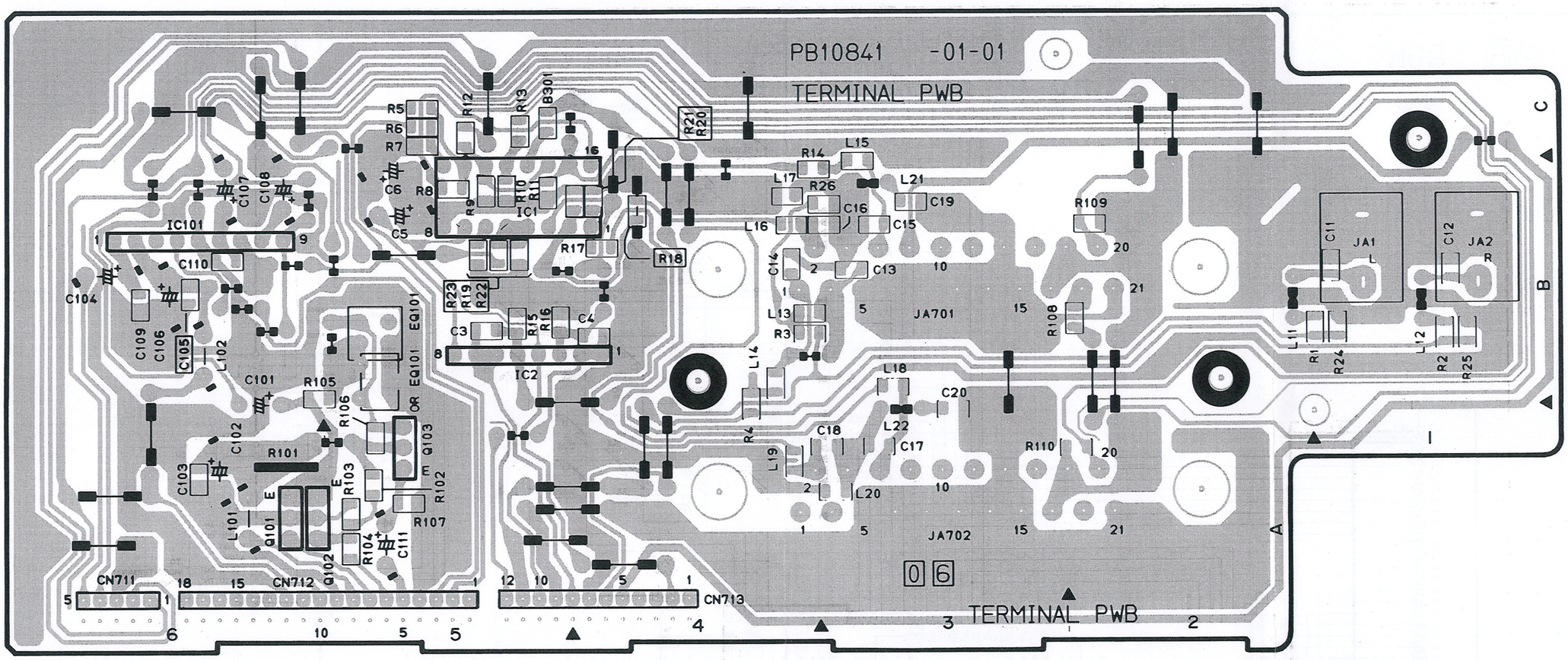
REF. No.	LOCATION
RESISTOR	
R116	8D
R117	2C
R118	3C
R120	1C

REF. No.	LOCATION
CAPACITOR	
C21	11D
C22	12D
C23	7D
C24	7D
C25	7D
C26	7D
C27	7B
C28	7B
C29	8B
C30	7B
C31	8D
C32	8B
C102	1C
C108	3B
C113	2D

4.18 TERMINAL & MAIN (TERMINAL) SCHEMATIC DIAGRAMS (for HR-J318E)



4.19 TERMINAL CIRCUIT BOARD (for HR-J318E)



MAIN CONPONENT PARTS LOCATION GUIDE

<TERMINAL PWB>

REF. No.	LOCATION
IC	
IC1	5B
IC2	5B
IC101	6B

REF. No.	LOCATION
TRANSISTOR	
Q101	6A
Q102	6A
Q103	5A

REF. No.	LOCATION
CONNECTOR	
CN712	6A
CN713	4A

LEADLESS COMPONENT PARTS LOCATION GUIDE

<TERMINAL PWB>

REF. No.	LOCATION
RESISTOR	
R1	1B
R2	1B
R3	4B
R4	4A
R5	5C
R6	5C
R7	5C
R8	5B
R9	5B
R10	5B
R11	5B
R12	5C
R13	5C
R14	4B

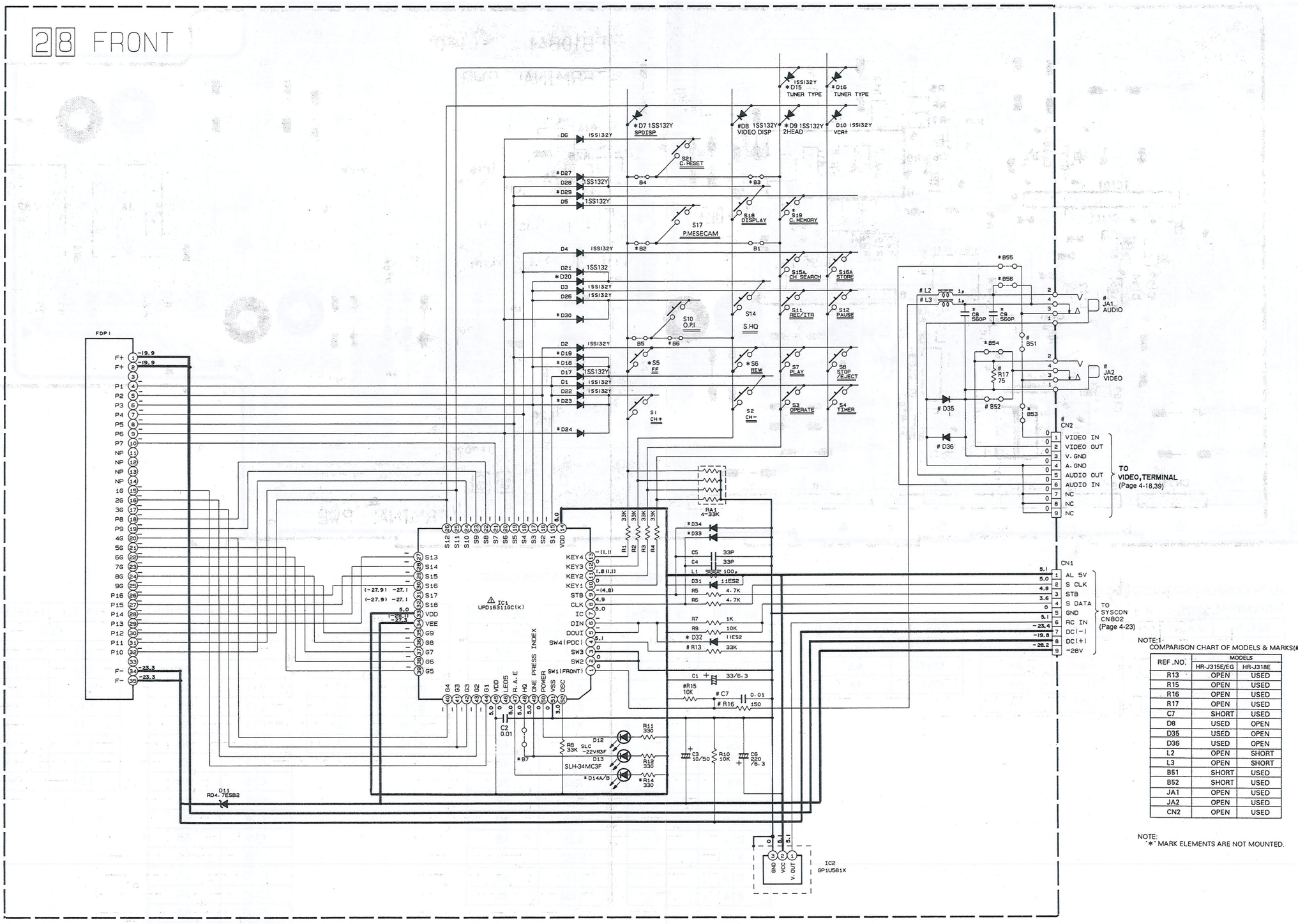
REF. No.	LOCATION
RESISTOR	
R15	4B
R16	5B
R17	4B
R18	4B
R19	5B
R20	4B
R21	4B
R22	5B
R23	5B
R24	1B
R25	1B
R102	5A
R103	5A
R104	5A

REF. No.	LOCATION
RESISTOR	
R105	6B
R106	5A
R107	5A
R108	2B
R109	2B
R110	2A

REF. No.	LOCATION
CAPACITOR	
C3	5B
C4	4B
C11	1B
C12	1B
C13	3B
C14	4B
C15	3B
C16	3B
C17	3A
C18	3A
C19	3B
C20	3A
C103	6A
C105	6B
C109	6B
C110	6B

REF. No.	LOCATION
COIL	
L13	4B
L14	4B
L15	3C
L16	4B
L17	4B
L18	3B
L19	4A
L20	3A

4.20 FRONT SCHEMATIC DIAGRAM



NOTE:1-
COMPARISON CHART OF MODELS & MARKS(#)

REF.NO.	MODELS	
	HR-J315E/EG	HR-J318E
R13	OPEN	USED
R15	OPEN	USED
R16	OPEN	USED
R17	OPEN	USED
C7	SHORT	USED
D8	USED	OPEN
D35	USED	OPEN
D36	USED	OPEN
L2	OPEN	SHORT
L3	OPEN	SHORT
B51	SHORT	USED
B52	SHORT	USED
JA1	OPEN	USED
JA2	OPEN	USED
CN2	OPEN	USED

NOTE:
'*' MARK ELEMENTS ARE NOT MOUNTED.

4.21 FRONT CIRCUIT BOARD

MAIN CONPONENT PARTS LOCATION GUIDE

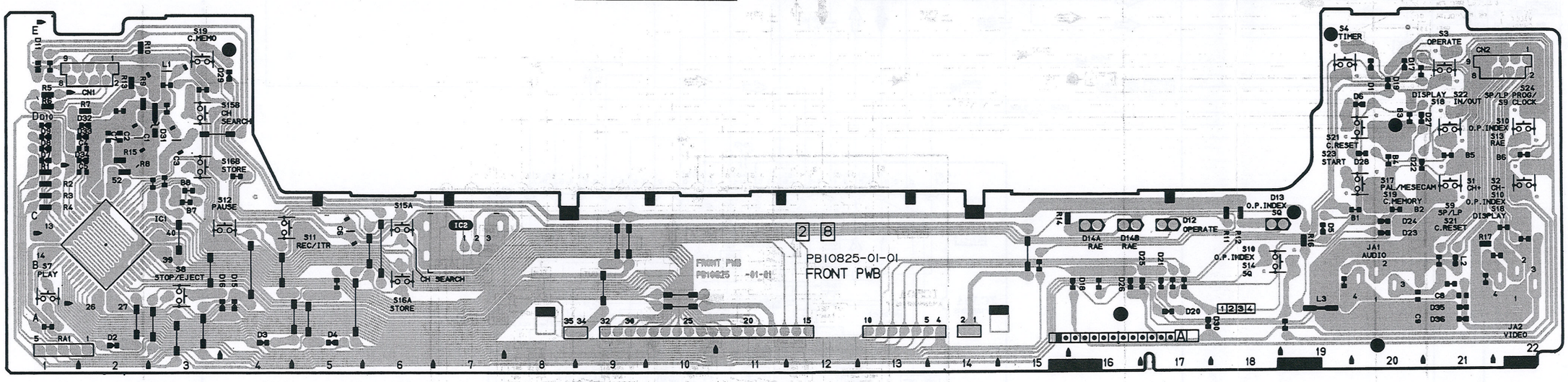
<FRONT PWB>

REF. No.	LOCATION
IC	
IC1	2B
IC2	7C

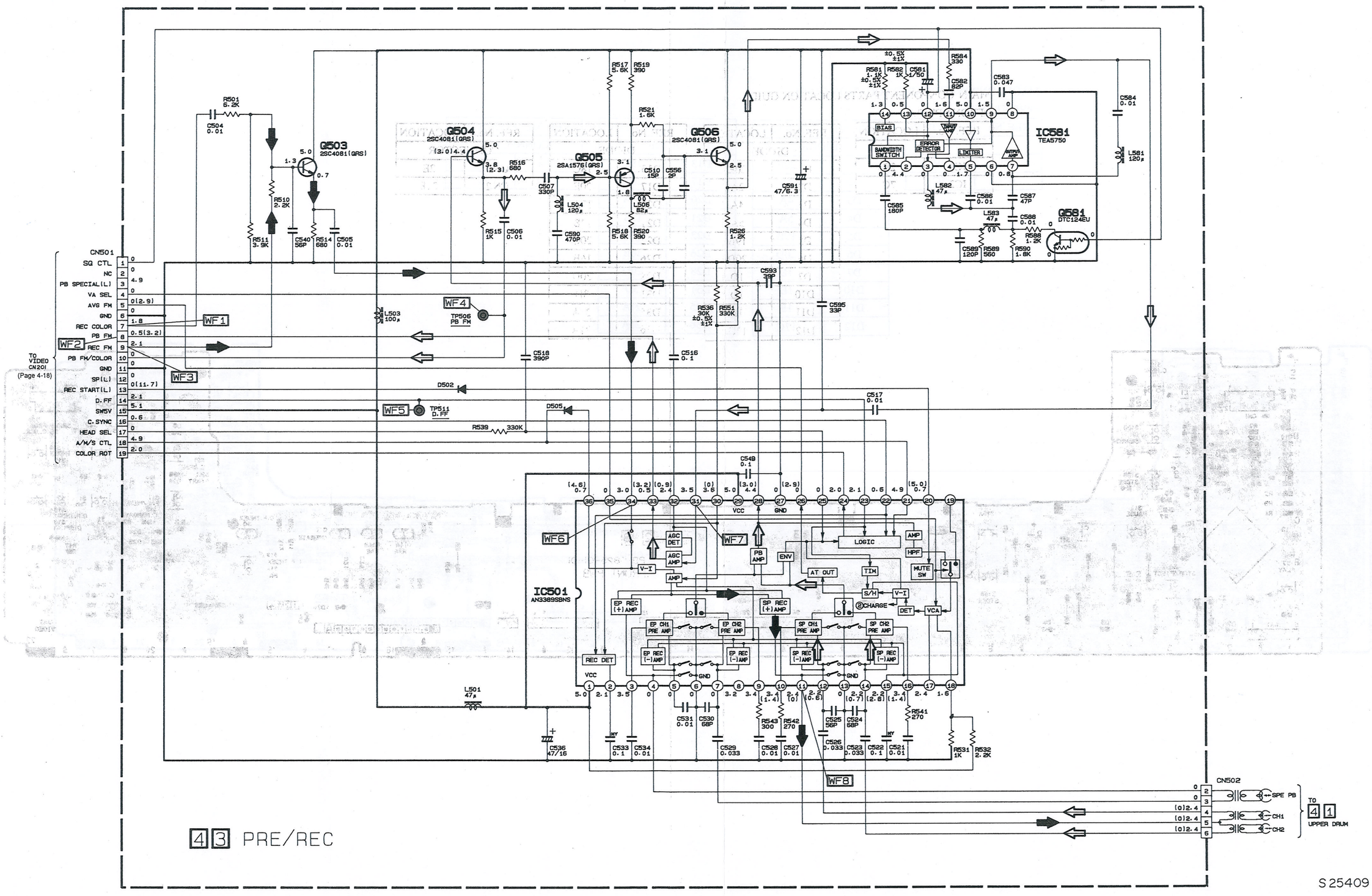
REF. No.	LOCATION
DIODE	
D1	20E
D2	2A
D3	4A
D4	5A
D5	19B
D6	20D
D7	1D
D10	1D
D11	1E
D12	17C

REF. No.	LOCATION
DIODE	
D13	18C
D17	20E
D20	17A
D21	17B
D22	20C
D26	16B
D28	20D
D31	3D
D35	21A
D36	21A

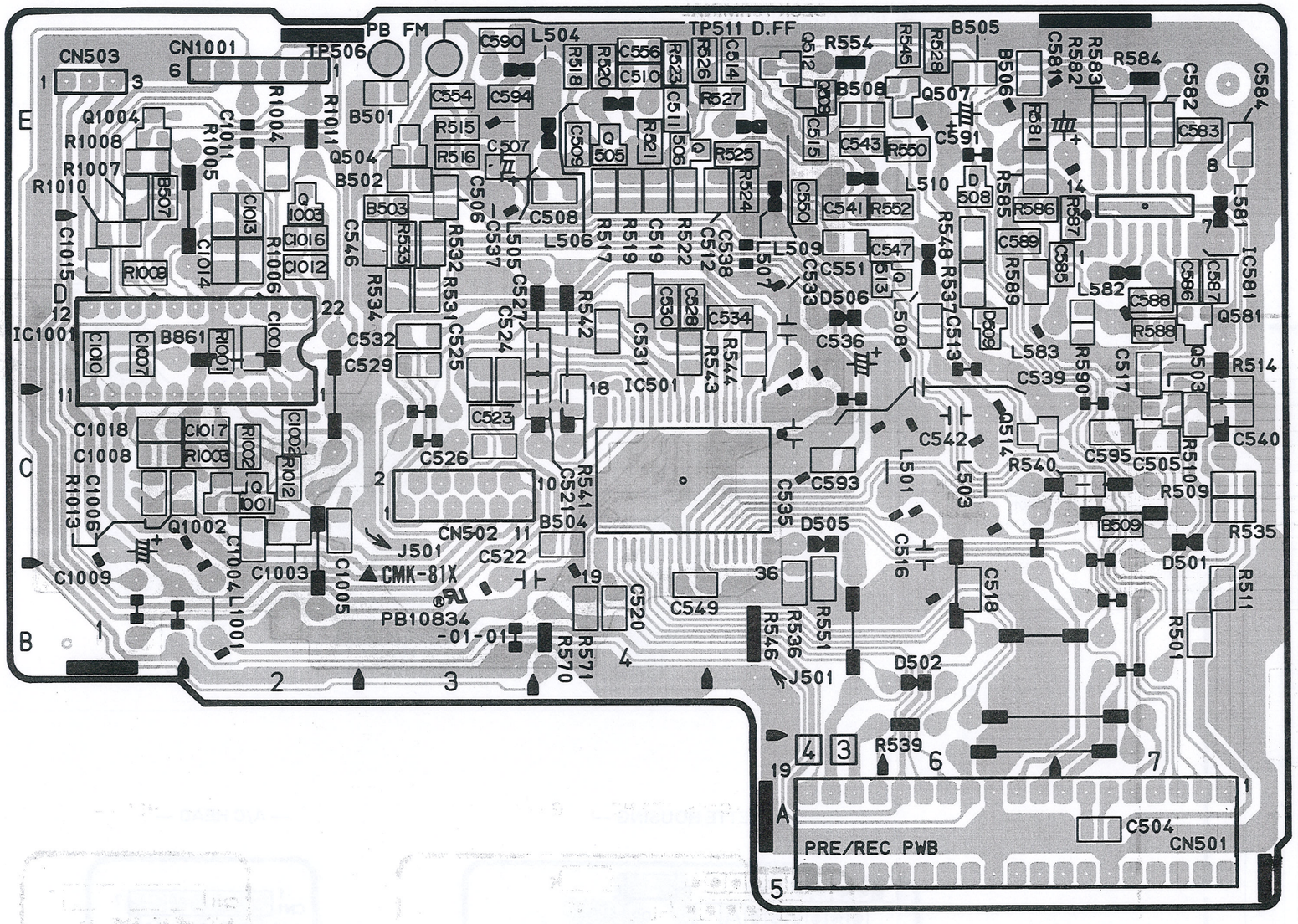
REF. No.	LOCATION
CONNECTOR	
CN1	2E
CN2	21E



4.22 PRE/REC SCHEMATIC DIAGRAM



4.23 PRE/REC CIRCUIT BOARD



LEADLESS COMPONENT PARTS
LOCATION GUIDE

<PRE/REC PWB>

REF. No.	LOCATION
IC	
IC501	4C
IC581	7D

REF. No.	LOCATION
TRANSISTOR	
Q503	7C
Q504	3E
Q505	4E
Q506	4E
Q507	6E
Q508	5E
Q512	5E
Q513	6D
Q514	6C
Q581	7D
Q1001	2C
Q1002	2C
Q1003	2E
Q1004	1E

REF. No.	LOCATION
DIODE	
D508	6E
D509	6D

REF. No.	LOCATION
RESISTOR	
R501	7B
R509	7C
R510	7C
R511	7B
R514	7C
R515	3E
R516	3E
R517	4E
R518	4E
R519	4E
R520	4E
R521	4E
R522	4E
R523	4E
R524	5E
R525	5E
R526	5E
R527	5E
R528	6E

REF. No.	LOCATION
RESISTOR	
R531	3D
R532	3D
R533	3D
R534	3D
R535	7C
R536	5B
R537	6D
R540	7C
R541	4C
R542	4D
R543	4D
R544	5D
R545	6E
R548	6D
R550	6E
R551	5B
R552	6E
R571	4B
R581	6E
R582	7E
R583	7E
R585	6E
R586	6E
R587	7D
R588	7D
R589	6D
R590	7D
R1001	2D
R1002	2C
R1003	2C
R1004	2E
R1005	2E
R1006	2D
R1007	1E
R1008	1E
R1009	1D
R1010	1D
R1012	2C
R1013	1C

REF. No.	LOCATION
CAPACITOR	
C504	7A
C505	7C
C506	3E
C507	3E
C508	4E
C509	4E

REF. No.	LOCATION
CAPACITOR	
C510	4E
C511	4E
C512	5E
C513	6D
C514	5E
C515	5E
C517	7D
C518	6B
C519	4E
C520	4B
C521	4C
C523	3C
C524	3D
C525	3D
C526	3C
C527	4D
C528	4D
C529	3D
C530	4D
C531	4D
C532	3D
C534	5D
C540	7C
C541	5E
C543	5E
C546	3D
C547	6D
C549	6B
C550	5E
C551	5D
C554	3E
C556	4E
C582	7E
C583	7E
C584	7E
C585	7D
C586	7D
C587	7D
C589	6D
C590	3E
C593	5C
C594	3E
C595	7C
C1001	2C
C1003	2C
C1004	2C
C1005	2C
C1006	1C
C1007	1D
C1008	1C
C1010	1D
C1012	2D
C1013	2E
C1014	2D
C1015	1D
C1016	2D
C1017	2C
C1018	1C

MAIN CONPONENT PARTS
LOCATION GUIDE

<PRE/REC PWB>

REF. No.	LOCATION
IC	
IC501	4C

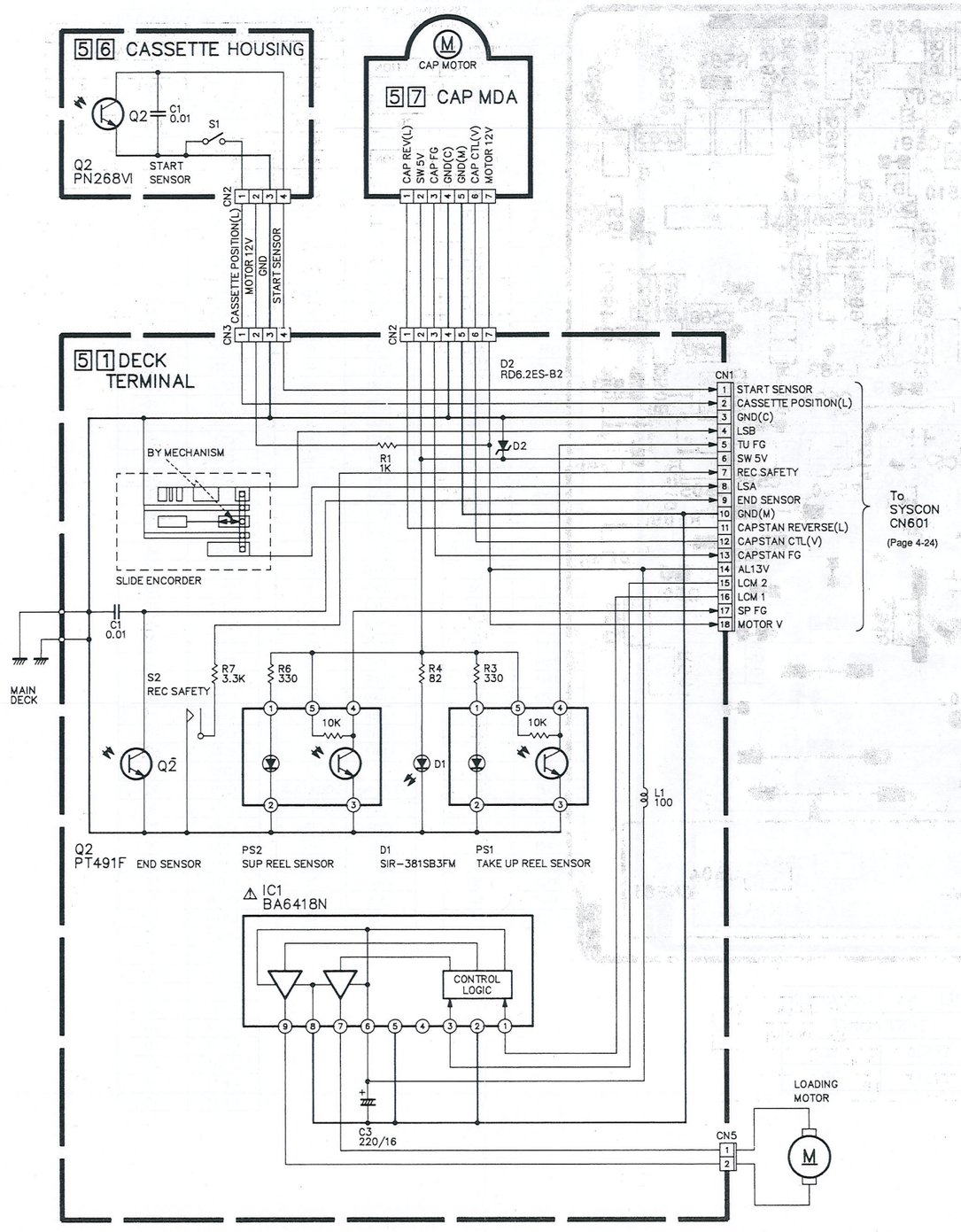
REF. No.	LOCATION
TRANSISTOR	
Q503	7C
Q504	3E
Q505	4E
Q506	4E
Q507	6E
Q508	5E
Q512	5E
Q514	6C

REF. No.	LOCATION
DIODE	
D501	7C
D502	6B
D505	5C
D508	6E

REF. No.	LOCATION
CONNECTOR	
CN501	7A
CN502	3C

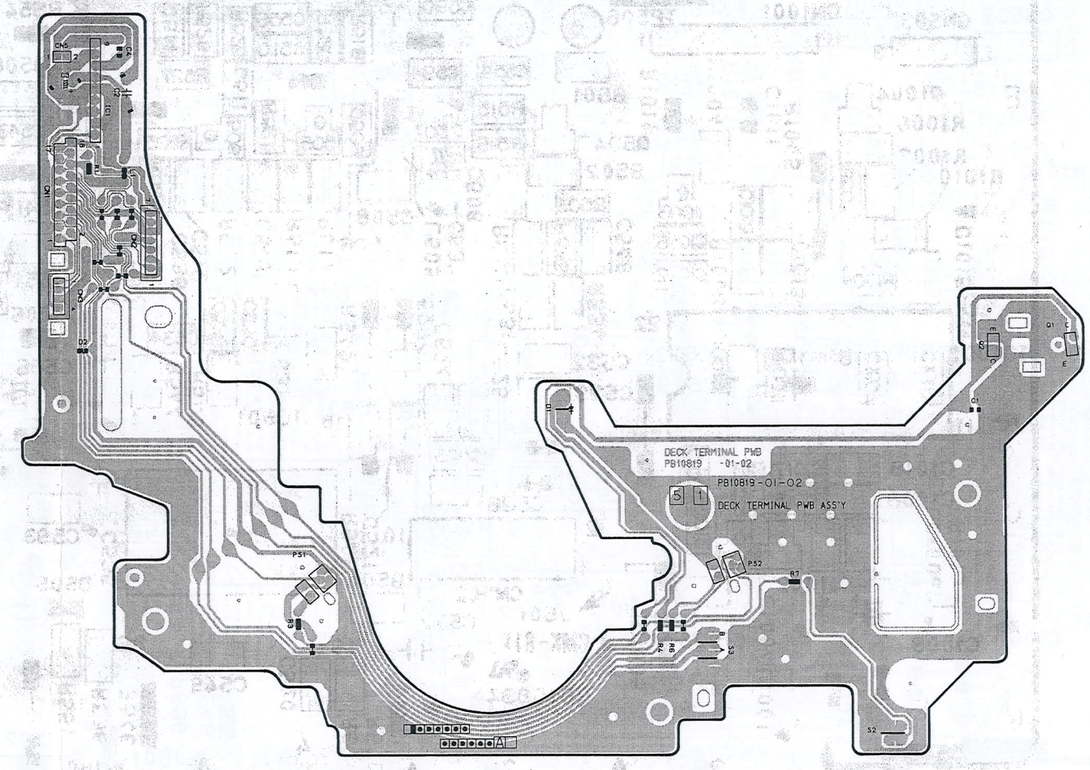
REF. No.	LOCATION
TEST POINT	
TP506	3E
TP511	3E

4.24 DECK TERMINAL, CASSETTE HOUSING AND CAPSTAN MDA SCHEMATIC DIAGRAMS

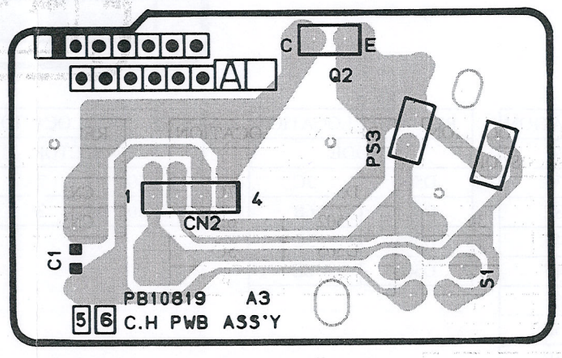


4.25 DECK TERMINAL, CASSETTE HOUSING AND A/C HEAD CIRCUIT BOARDS

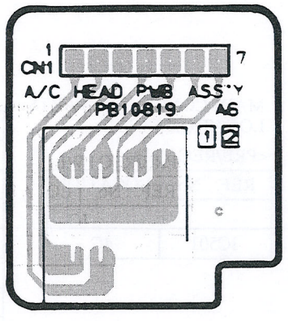
— DECK TERMINAL —



— CASSETTE HOUSING —

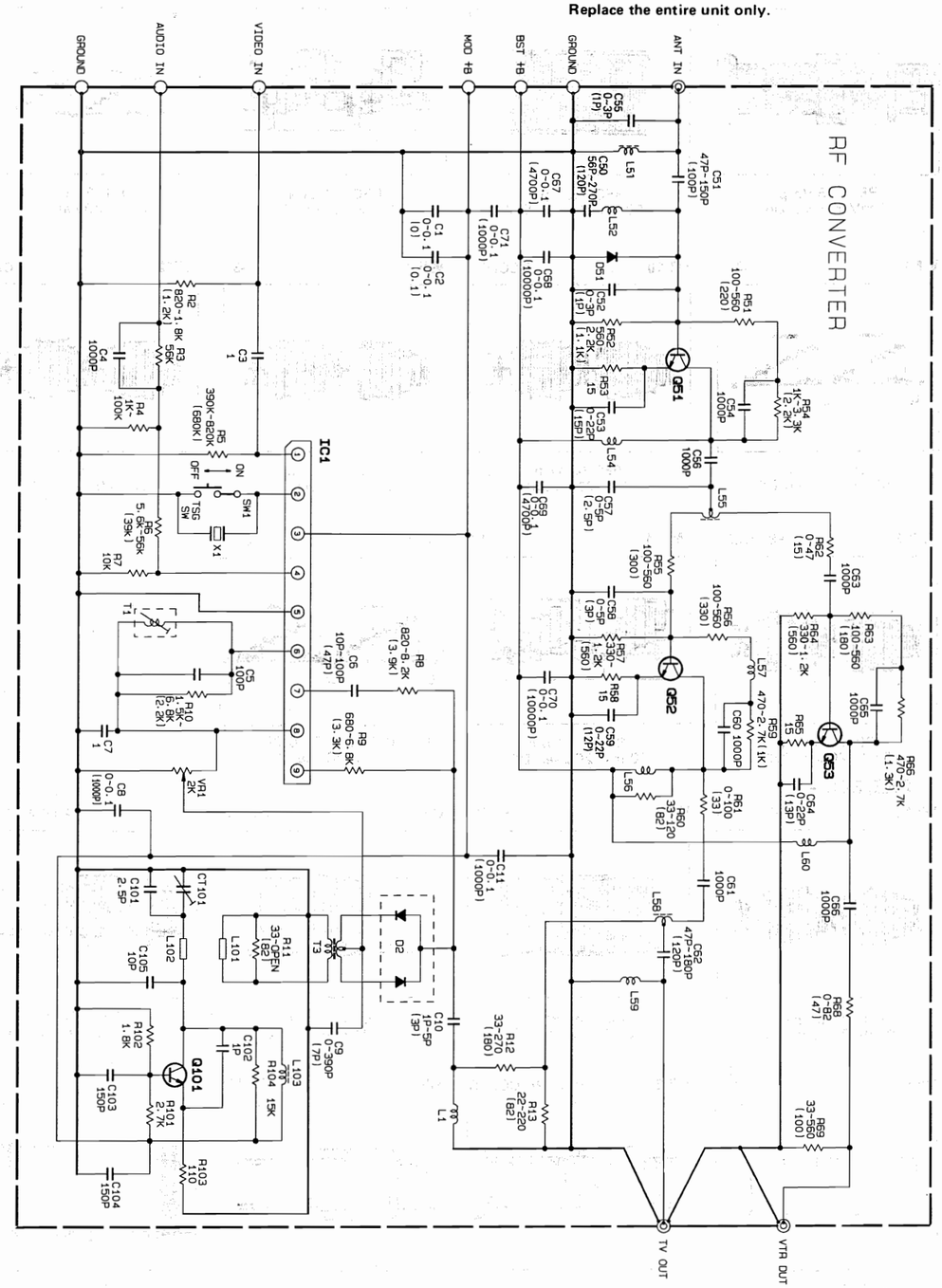


— A/C HEAD —



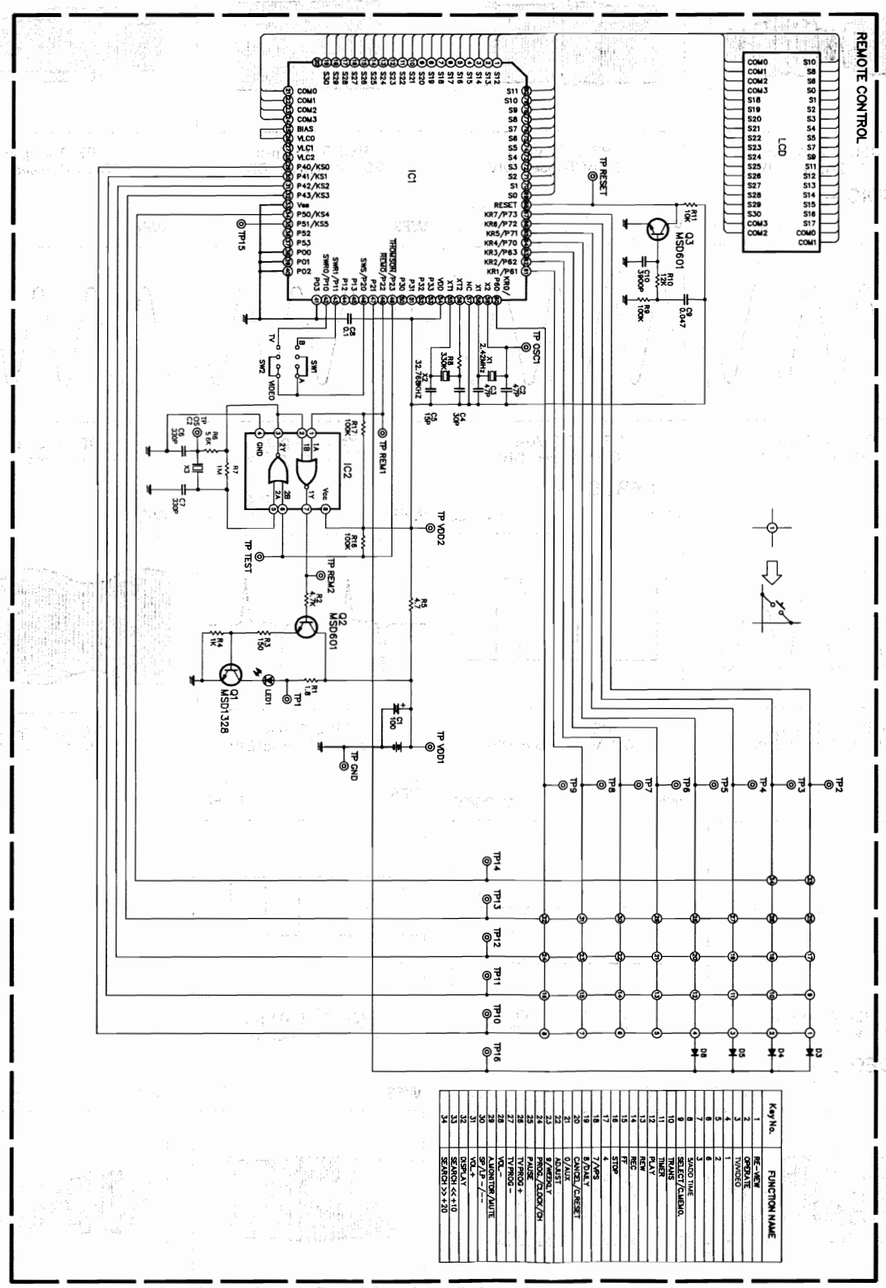
4.26 RF CONVERTER SCHEMATIC DIAGRAM

NOTE:
1. All parts shown in this schematic are critical for safety.
2. This schematic is only for reference.
   Avoid replacing individual parts.
   Replace the entire unit only.



4.27 REMOTE CONTROL SCHEMATIC DIAGRAM

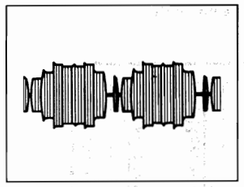
NOTE:
1. All parts shown in this schematic are critical for safety.
2. This schematic is only for reference.
   Avoid replacing individual parts.
   Replace the entire unit only.



4.28 WAVEFORMS

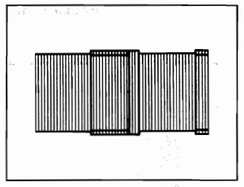
— VIDEO —

WF1 REC COLOR



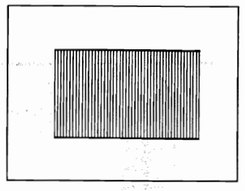
REC 0.23 Vp-p
5 mV/20μsec/DIV

WF2 PB FM



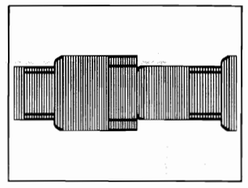
PB 0.42 Vp-p
10 mV/5 msec/DIV

WF3 REC FM



REC 0.65 Vp-p
20 mV/5 msec/DIV

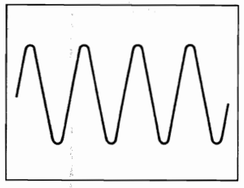
WF4 PB FM/COLOR



PB 0.4 Vp-p
10 mV/5 msec/DIV

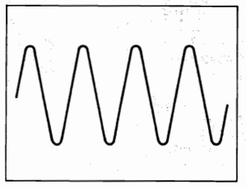
— AUDIO —

WF1 CN301-1



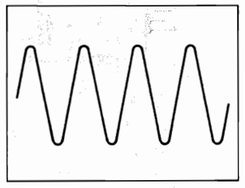
REC 44.0 Vp-p
1.0 V/10μsec/DIV

WF2 TP333 ERASE



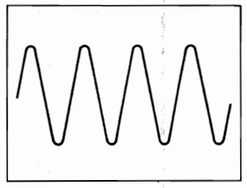
REC 36.0 Vp-p
1.0 V/10μsec/DIV

WF3 IC301-12



PB 2.2 Vp-p
0.1 V/2 msec/DIV

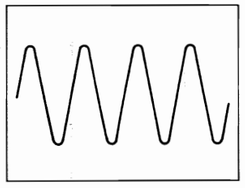
WF4 AUX IN



REC 0.2 Vp-p
10 mV/1 msec/DIV

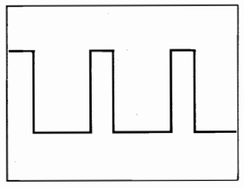
— SERVO —

WF5 AUDIO OUT



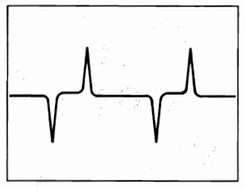
REC/PB 2.4 Vp-p
0.1 V/1 msec/DIV

WF1 IC401-29



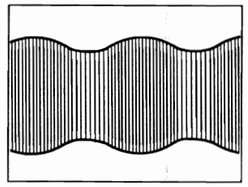
REC 6.0 Vp-p
0.1 V/10 msec/DIV

WF2 TP401 CTL PULSE



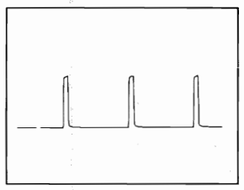
PB 2.5 Vp-p
50 mV/10 msec/DIV

WF3 CAP. FG



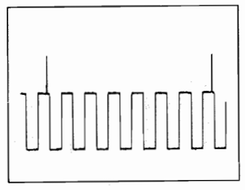
REC 3.0 Vp-p
0.1 V/10 msec/DIV

WF4 C. SYNC



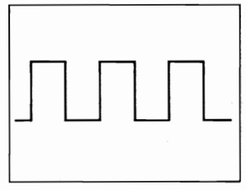
REC 4.2 Vp-p
0.1 V/20 μsec/DIV

WF5 D. PG/FG



REC/PB 4.2 Vp-p
0.1 V/5 msec/DIV

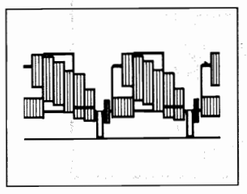
WF6 TP411 D. FF



REC/PB 5.0 Vp-p
0.2 V/10 msec/DIV

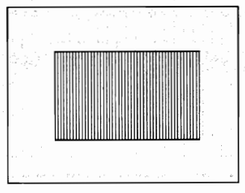
— VIDEO UNIT —

WF1 VIDEO OUT



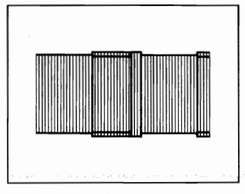
REC/PB 2.2 Vp-p
50 mV/20 μsec/DIV

WF2 REC FM



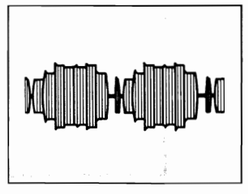
REC 0.68 Vp-p
20 mV/2 msec/DIV

WF3 PB FM



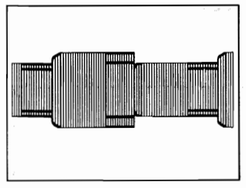
PB 0.44 Vp-p
10 mV/5 msec/DIV

WF4 REC COLOR



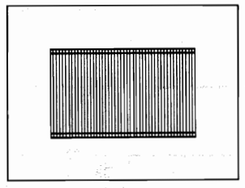
REC 0.22 Vp-p
5 mV/20 μsec/DIV

WF5 PB COLOR



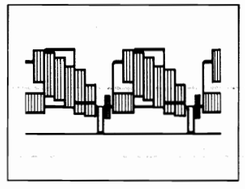
PB 0.36 Vp-p
10 mV/5 msec/DIV

WF6 REC FM



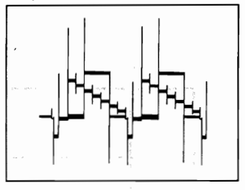
REC 1.3 Vp-p
50 mV/2 msec/DIV

WF7 IC2-14



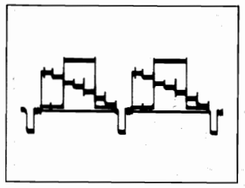
REC 1.1 Vp-p
20 mV/20 μsec/DIV

WF8 IC2-12



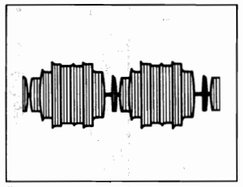
PB 0.32 Vp-p
10 mV/20 μsec/DIV

WF9 IC2-11



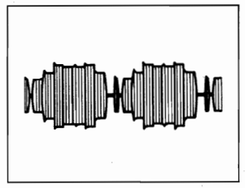
REC 0.52 Vp-p
20 mV/20 μsec/DIV

WF10 REC COLOR



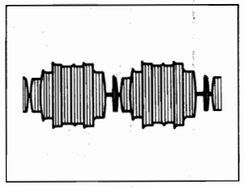
REC 0.4 Vp-p
10 mV/20 μsec/DIV

WF11 IC2-37



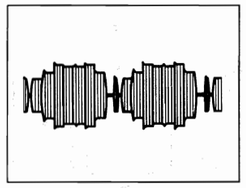
PB 0.8 Vp-p
20 mV/20 μsec/DIV

WF12 IC2-39



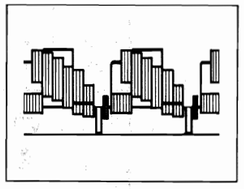
PB 0.8 Vp-p
20 mV/20 μsec/DIV

WF13 PB COLOR



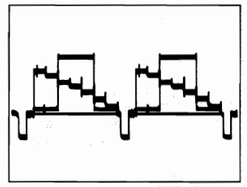
PB 0.08 Vp-p
5 mV/20 μsec/DIV

WF14 AUX IN



REC 1.1 Vp-p
20 mV/20 μsec/DIV

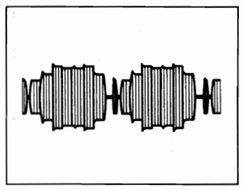
WF15 IC1-4



REC 0.3 Vp-p/PB 0.38 Vp-p
10 mV/20 μsec/DIV

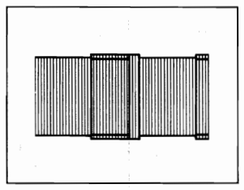
— PRE/REC —

WF1 REC COLOR



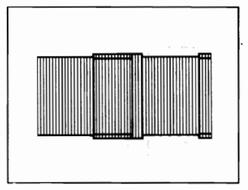
REC 0.23 Vp-p
10 mV/20 μsec/DIV

WF2 PB FM



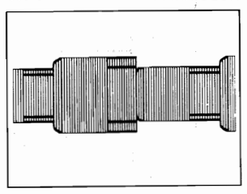
PB 0.34 Vp-p
10 mV/5 msec/DIV

WF3 REC FM



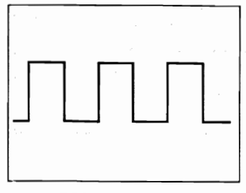
REC 0.7 Vp-p
20 mV/5 msec/DIV

WF4 TP506 PB FM/COLOR



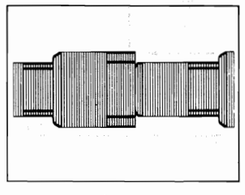
PB 0.42 Vp-p
10 mV/5 msec/DIV

WF5 TP511 D. FF



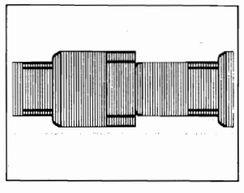
REC/PB 5.2 Vp-p
0.2 mV/5 msec/DIV

WF6 REC FM/COLOR



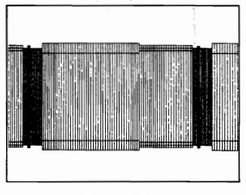
PB 0.17 Vp-p
5 mV/5 msec/DIV

WF7 PB FM



PB 0.36 Vp-p
10 mV/5 msec/DIV

WF8 COMMON



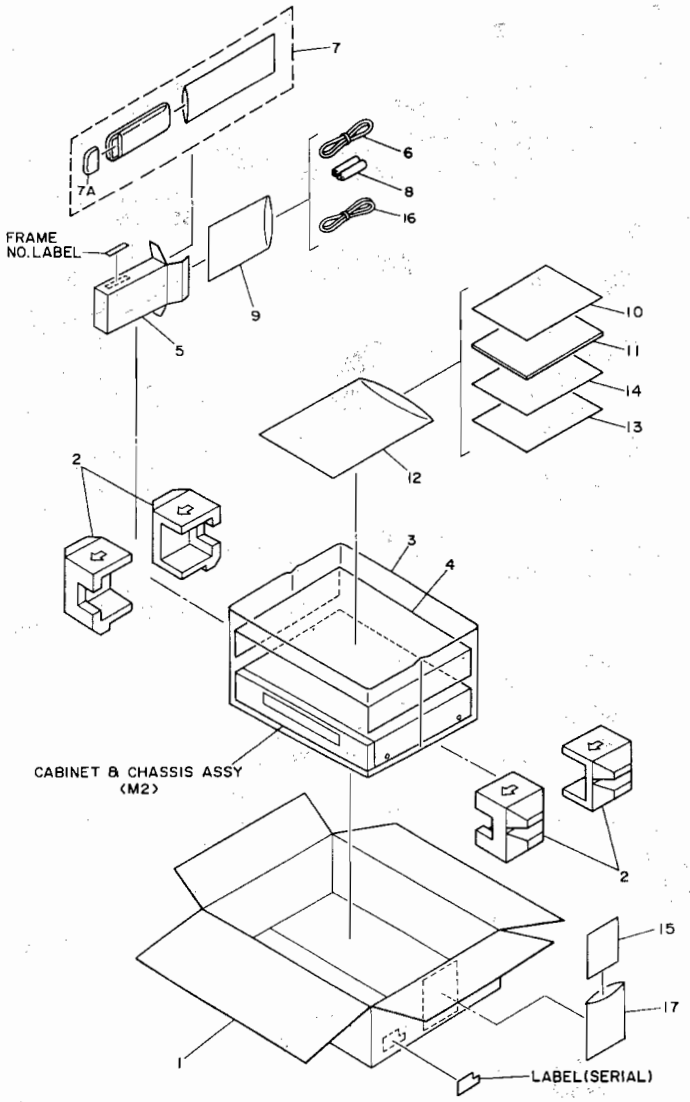
REC 2.0 Vp-p
50 mV/5 msec/DIV

SECTION 5
PARTS LIST

SAFETY PRECAUTION

Parts identified by the ⚠ symbol are critical for safety. Replace only with specified part numbers.

5.1 PACKING AND ACCESSORY ASSEMBLY <M1>



#⚠	REF No.	PART No.	PART NAME, DESCRIPTION

****

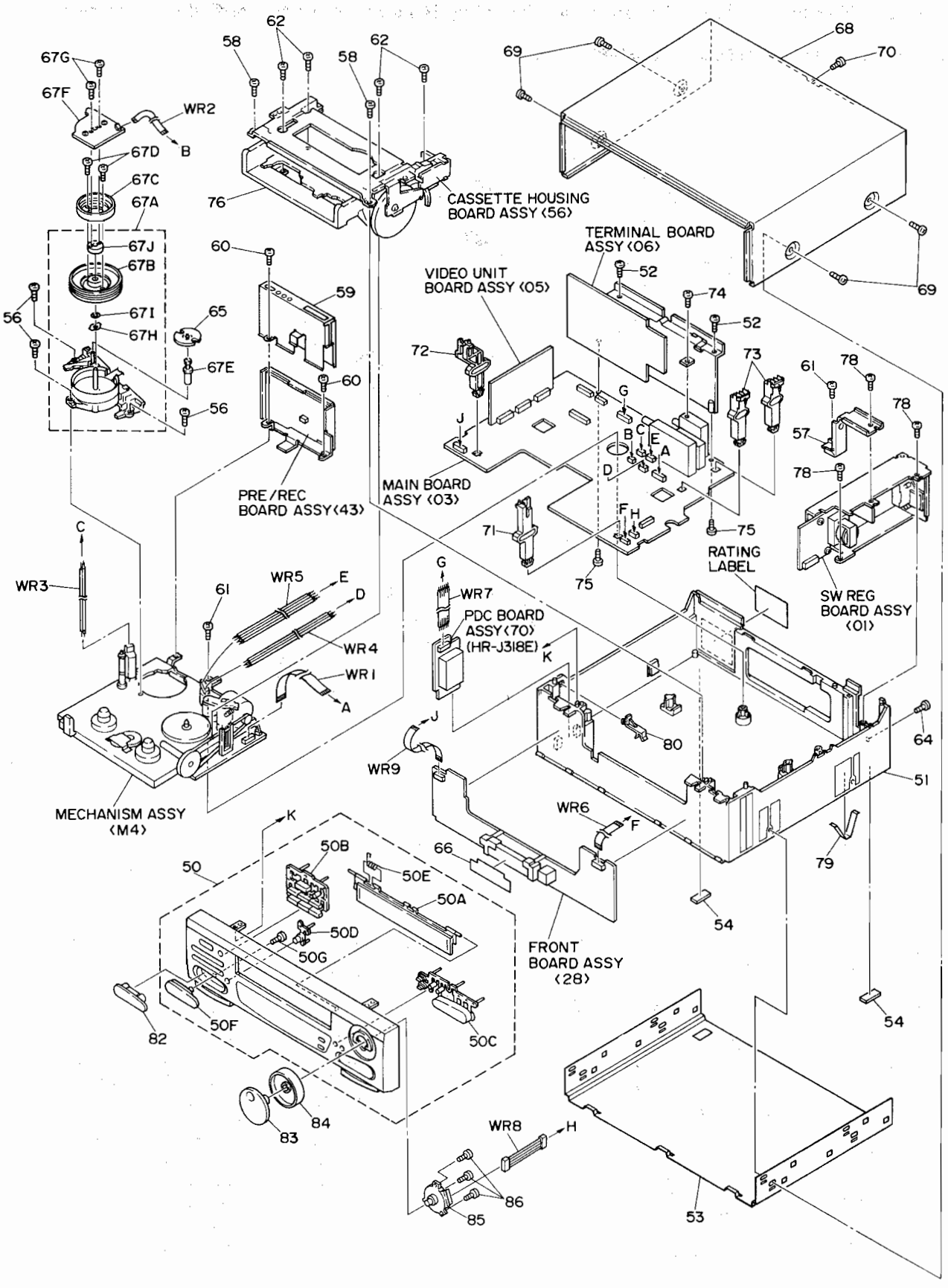
PACKING AND ACCESSORY ASSEMBLY <M1>

	1	PQ35075-11	PACKING CASE,J315EG
		PQ35075-7	PACKING CASE,J315E
		PQ35075-5	PACKING CASE,J318E
	2	PQ35112A	CUSHION ASSEMBLY
	3	PQM30021-88	POLY BAG
	4	PQ41026-37	PROTECT SHEET
	5	PQ34715-3	CASE,ACCESSORY
⚠	6	PEAC0300-02	RF CABLE,J315EG
⚠		PU59168-7	RF CABLE,J315E J318E
⚠	7	PQ11534M	REMOTE CONTROLLER,J315E J318E
⚠		PQ11534P	REMOTE CONTROLLER,J315EG
	7A	PQ46063-2	CAP(BATTERY)
	8	R6PRPA-2ST	BATTERY,X2
	9	QPGA020-02005	POLY BAG
⚠	10	PU30425-1463	INSTRUCTIONS,J318E
⚠		PU30425-1468	INSTRUCTIONS,J315E
⚠		PU30425-1479	INSTRUCTIONS,J315EG
⚠	11	PU30425-1469	INSTRUCTIONS,J315E
	12	QPGA025-03505	POLY BAG
⚠	13	PQ45146-43	SHEET(SPAIN),J315E
⚠		PQ45146-45	SHEET(SPAIN),J318E
	14	PQ34978-11	SHEET(S.V.),J315E J315EG
		PQ34978-12	SHEET(S.V.),J318E
	15	BT-20135	WARRANTY CARD,J315EG
⚠	16	QMP40E0-183	POWER CORD
	17	PQ33909	POLY BAG,J315EG

5.2 CABINET AND CHASSIS ASSEMBLY <M2>

BEWARE OF BOGUS PARTS

Parts that do not meet specifications may cause trouble in regard to safety and performance. We recommend that genuine JVC parts be used.



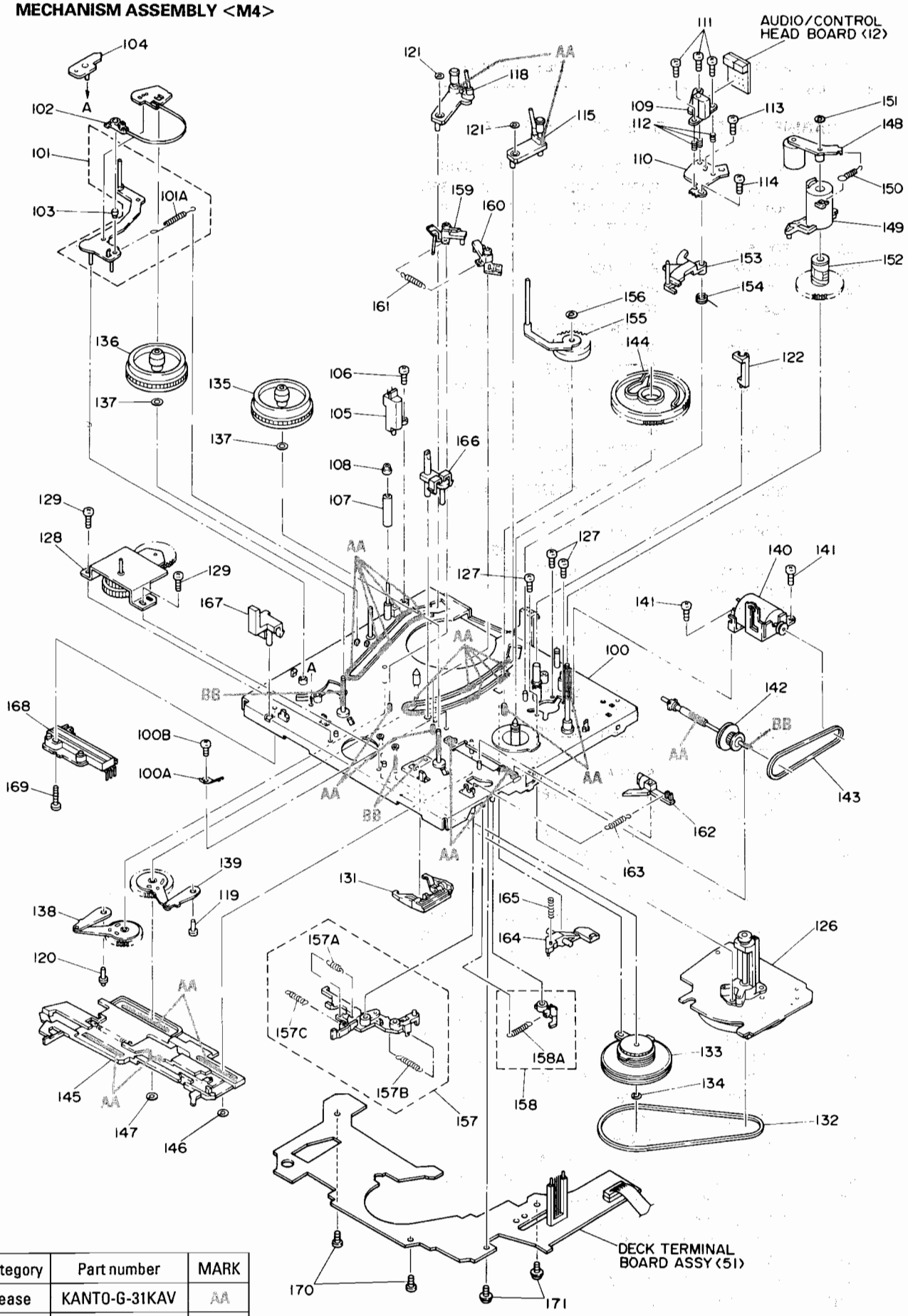
#⚠	REF No.	PART No.	PART NAME, DESCRIPTION

****

CABINET AND CHASSIS ASSEMBLY <M2>

⚠	50	PQ11616D	FRONT PANEL ASSEMBLY,J315E
⚠		PQ11616H	FRONT PANEL ASSEMBLY,J315EG
⚠		PQ11616C-1	FRONT PANEL ASSEMBLY,J318E
	50A	PQ21627-4	CASSETTE DOOR
	50B	PQ21637-2	BUTTON(1)
	50C	PQ21638-3	BUTTON(2)
	50D	PQ34915	BUTTON(3)
	50E	PQ45704	TORSION SPRING
	50F	PQ35006	COVER(FRONT),J315E J315EG
	50G	SDSF2608Z	SCREW,COVER J315E J315EG
⚠	51	PQ11622-1-7	BOTTOM CHASSIS
	52	SDSF3008Z	SCREW,X2 TERMINAL BOARD
⚠	53	PQ11625	BOTTOM COVER
	54	PQ43013-5	FOOT,X2
	56	SPST2610Z	SCREW,X3 DRUM
	57	PQ35010	BRACKET(M.DECK)
	58	SDSF3010Z	SCREW,X2 CASSETTE HOUSING
	59	PQ21513-1-1	S.CASE(PRE.)
	60	SDSG2606Z	SCREW,X2 PRE
	61	PQ43831	SPECIAL SCREW,X2 MECHA
	62	SPST2608Z	SCREW,X4 CASSETTE HOUSING
	64	SDSB3008M	SCREW,INLET
	65	PQ45160	INERTIA PLATE
	66	PQ46283	FILTER(FDP)
	67A	PDM2232Y	DRUM SUB ASSEMBLY
	67B	PDM3353K	UPPER DRUM ASSEMBLY
	67C	PDZ0141-2	ROTOR ASSEMBLY
	67D	SPSH2660Z	SCREW,X2
	67E	PDM4311A-1	ROLLER ASSEMBLY
⚠	67F	PDZ0141	STATOR ASSEMBLY
	67G	SPSP2606Z	SCREW,X2
	67H	PDM4343A	BRUSH ASSEMBLY
	67I	PDM4050-9	WASHER
	67J	PDM4345A	COLLAR ASSEMBLY
⚠	68	PQ11623	TOP COVER
	69	PQ43827	SPECIAL SCREW,X4 TOP COVER
	70	SDSF3008M	SCREW
	71	PEME0938	HOLDER (PWB),CASSETTE HOUSING
	72	PEME0942	HOLDER (MAIN),CASSETTE HOUSIG
	73	PEME0943-01-01	HOLDER (REG.),X2 T BRACKET
	74	SDST2605Z	SCREW,RF CONVERTER
	75	SDSF3008Z	SCREW,X2 TERMINAL BOARD ASSY
	76	PUS29672C	CASSETTE HOUSING ASSEMBLY
	78	SDSF3008Z	SCREW,X3 SUPPLY BOARD ASSY
	79	PQ34737	EARTH PLATE,POWER SUPPLY
	80	PQ34691	PWB HOLDER,J318E PDC
	82	PQ35007	COVER(JACK),J318E
	83	PQ34916-2	KNOB(JOG)
	84	PQ34917-2	KNOB(SHUTTLE)
	85	PEME0757-03	JOG SHUTTLE ASSEMBLY
	86	SDSF2608Z	SCREW,X3 JOG SHUTTLE ASSY
	WR1	PW30802-1826	FFC WIRE,D/T
	WR2	PW30803-0422	FFC,DRUM
	WR3	PW30701-30AAYY	WIRE,FE
	WR4	PW30702-12AAYY	WIRE,CTL
	WR5	PW30705-12AAYY	WIRE,AUDIO
	WR6	PW30802-0913	FFC WIRE,M.CN802
	WR7	PW30101-W0HH887	RIBON WIRE,P.D.C J318E
	WR8	PW30218-0771613	WIRE,JOG
	WR9	PW30802-0915	FFC WIRE

5.3 MECHANISM ASSEMBLY <M4>



Category	Part number	MARK
Grease	KANTO-G-31KAV	AA
Oil	COSMO-HV56	BB

NOTE: The section marked in AA and BB indicate lubrication and greasing areas.

MECHANISM ASSEMBLY <M4>

#⚠	REF No.	PART No.	PART NAME, DESCRIPTION
	100	PQ20650K	MAIN DECK ASSEMBLY
	100A	PQ43849	EARTH PLATE
	100B	SPST2604Z	SCREW
	101	PQ43497K	TENSION ARM ASSY
	101A	PQ43500	TENSION SPRING
	102	PQ43501B-12	TENSION BAND ASSY
	103	PQ43503-1-4	ADJUST PIN
	104	PQ44246	TENSION BAND BRACKET-3
	105	PEHE0237	FULL ERASE HEAD
	106	SDSF2614Z	SCREW,F E HEAD
	107	PQ43505-1-1	ROLLER
	108	PQ43506	GUIDE POLE CAP
	109	PEHE0182	AUDIO CONTROL HEAD
	110	PQ43509	HEAD BASE
	111	PQ43687A	SPECIAL SCREW,X3
	112	PQM30002-192	COMPRESSION SPRING,X3
	113	SPSF2608M	SCREW
	114	SPSP2606Z	SCREW
	115	PU61103-2-7	POLE BASE ASSY(TAKE UP)
	118	PU61151-2-6	POLE BASE ASSY(SUPPLY)
	119	PQ45895	STOPPER(T)
	120	PQ45894	STOPPER(S)
	121	PQM30017-41	SLIT WASHER,X2
	122	PQ43675-1-5	TAPE GUARD
⚠	126	PU61285	CAPSTAN MOTOR
	127	SPSG2608Z	SCREW,X3
	128	PU60618-1-3	IDLER GEAR UNIT
	129	SPST2606Z	SCREW,X2
	131	PQ43532B-4	CHANGE LEVER ASSEMBLY
	132	PQM30003-24	TIMER BELT
	133	PU60953-1-6	CLUTCH UNIT
	134	PQM30017-8	SLIT WASHER
	135	PQ46072A	REEL DISK ASSY(TAKE UP)
	136	PU60859-1-4	REEL DISK (SUPPLY)
	137	PQM30018-54	SPACER,X2
	138	PQ43537B	LOADING ARM ASSY (SUPPLY)
	139	PQ43542D-4	LOADING ARM ASSY(TAKE UP)
	140	PQ43676B-5	MODE MOTOR ASSY
	141	SPST2606Z	SCREW,X2
	142	PQ43548A-2	WORM CLUTCH ASSY
	143	PQM30003-23	BELT
	144	PQ32413-1-6	CONTROL CAM
	145	PQ43555C-10	PLATE ASSY
	146	PQM30017-12	SLIT WASHER
	147	PQM30017-8	SLIT WASHER
	148	PQ43523C	PINCH ROLLER LEVER ASSY
	149	PQ32415	PINCH ROLLER PRESS LEVER
	150	PQM30001-233	TENSION SPRING
	151	PQM30017-12	SLIT WASHER
	152	PQ32416-2	PINCH ROLLER CAM
	153	PQ43567A-13	GUIDE ARM ASSY
	154	PQ43569-1-3	TORSION SPRING
	155	PQ45073B	HALF LOADING GEAR ASSY
	156	PQM30017-13	SLIT WASHER
	157	PQ43575A-7	C.LEVER ASSY
	157A	PQM30001-273	TENSION SPRING
	157B	PQM30001-237	TENSION SPRING
	157C	PQM30001-274	TENSION SPRING
	158	PQ43578A-2	HOOK ASSY
	158A	PQM30001-238	TENSION SPRING
	159	PQ43581E	MAIN BRAKE(SUPPLY) ASSY
	160	PQ43582D	MAIN BRAKE(TAKE UP) ASSY
	161	PQM30001-251	TENSION SPRING
	162	PQ43583A-3	SUB BRAKE ASSY(TAKE-UP)
	163	PQM30001-235	TENSION SPRING
	164	PQ43584A-5	CAPSTAN BRAKE ASSY
	165	PQM30002-201	COMPRESSION SPRING
	166	PQ21546	LED PRISM
	167	PU61281	REC SAFETY SWITCH
	168	PU60622-1-2	SLIDE SWITCH
	169	SDSF2614Z	SCREW
	170	SDST2616Z	SCREW,X2
	171	GPSF2608Z	SCREW,X2

5.4 ELECTRICAL PARTS LIST

#⚠	REF No.	PART No.	PART NAME, DESCRIPTION	

****

SW.REG BOARD ASSEMBLY <01>

	PWBA1	PB20651A-01	SWITCH REG BOARD ASSY,J315E J318E	
		PB20651B-01	SWITCH REG BOARD ASSY,J315EG	
	Q1	2SC4517A-LF619	TRANSISTOR	
	Q2	2SC3616(MLK)	TRANSISTOR	
	Q31	2SC1740S(RS)	TRANSISTOR	
	D1	10E6-F2	DIODE	
	D2	10E6-F2	DIODE	
	D3	10E6-F2	DIODE	
	D4	10E6-F2	DIODE	
	D6	1SS133	DIODE	
	D7	UZ27BSB	ZENER DIODE	
	D8	1SS133	DIODE	
	D9	AU01	FR DIODE	
	D10	AU01	FR DIODE	
	D31	AU01Z	FR DIODE	
	D32	RL2Z-LFB2	FR DIODE	
	D33	RL2Z-LFB2	FR DIODE	
	D35	AU01Z	FR DIODE	
	D36	RK14LF-B2	BARRIER DIODE	
	D37	AU01Z	FR DIODE	
	D38	1SS133	DIODE	
	D40	RD15ES-T1B1	ZENER DIODE	
	D41	RD6.2ES-T1B3	ZENER DIODE	
	D42	RD30ES-T1B1	ZENER DIODE	
	D43	1SS133	DIODE	
	R4	QRD161J-224	RESISTOR	220kΩ,1/6W
	R5	QRD161J-224	RESISTOR	220kΩ,1/6W
	R8	QRX014J-R39Z	MF RESISTOR	0.39Ω,1W
	R9	QRG029J-683G	OMF RESISTOR	68kΩ,2W
	R10	QRG029J-331A	OMF RESISTOR	330Ω,2W
	R11	QRD161J-122	RESISTOR	1.2kΩ,1/6W
	R14	QRD161J-681	RESISTOR	680Ω,1/6W
	R15	QRD161J-683	RESISTOR	68kΩ,1/6W
	R31	QRX014J-1R8Z	MF RESISTOR	1.8Ω,1W
⚠	R32	QRZ0077-470	FUSIBLE RESISTOR,J315E J318E	47Ω,1/4W
⚠		QRZ0077-470X	FUSIBLE RESISTOR,315EG	47Ω,1/4W
⚠	R33	QRG02DJ-222	OMF RESISTOR,J315E J318E	2.2kΩ,2W
⚠		QRG02DJ-222X	OMF RESISTOR,J315EG	2.2kΩ,2W
	R34	QRV144F-4870AY	CMF RESISTOR	487Ω,1/4W
	R35	QRD161J-471	RESISTOR	470Ω,1/6W
	R36	QRV144F-3740AY	CMF RESISTOR	374Ω,1/4W
	R37	QRD161J-122	RESISTOR	1.2kΩ,1/6W
⚠	C1	QFZ9037-333	F CAPACITOR,J315EG	0.033μF
⚠	C2	QFZ9022-683	F CAPACITOR,J315E J318E	0.068μF
⚠		QFZ9037-333	F CAPACITOR,J315EG	0.033μF
⚠	C3	QFZ9022-333	F CAPACITOR,J315E J318E	0.033μF
⚠	C4	QCZ9016-221K	CAPACITOR	220pF
⚠	C5	QCZ9016-221K	CAPACITOR	220pF
⚠	C6	QCZ9016-221K	CAPACITOR,J315E J318E	220pF
⚠	C8	QCZ9016-221K	CAPACITOR,J315E J318E	220pF
⚠	C9	QCZ9026-222	CAPACITOR	0.0022μF
	C10	PECA0793-686	E CAPACITOR	68μF,400V
	C12	QETC1HM-225	E CAPACITOR	2.2μF,50V
	C13	QCZ0212-472	CAPACITOR	0.0047μF,1kV
	C16	QFLA1HJ-103Z	F CAPACITOR	0.01μF,50V
	C20	QCZ0136-101Z	CAPACITOR	100pF,1kV
	C21	QFV11HJ-104AZ	F CAPACITOR	0.1μF,50V
	C31	QETC1JM-226	E CAPACITOR	22μF,63V
	C32	QEGB1CM-477	E CAPACITOR	470μF,16V
	C33	QEGB1AM-477	E CAPACITOR	470μF,10V
	C34	QETC1HM-226	E CAPACITOR	22μF,50V
	C35	QEGB1AM-107	E CAPACITOR	100μF,10V
	C36	QETB1AM-477	E CAPACITOR	470μF,10V
	C37	QETB1EM-227	E CAPACITOR	220μF,25V
	C38	QETC1HM-474	E CAPACITOR	0.47μF,50V
	C39	QFLA1HJ-103Z	F CAPACITOR	0.01μF,50V
	C40	QEGB1EM-227	E CAPACITOR	220μF,25V
	C42	QETB1CM-477	E CAPACITOR	470μF,16V
	L31	PELN0687	COIL	
	L32	PELN0687	COIL	
	L33	PELN0687	COIL	
⚠	PC1	PC120FY9	PH COUPLER,J315EG	
⚠		PS2561L-1(WL)	PH COUPLER,J315E J318E	
⚠	T1	PELN0987	SW TRANS	
⚠	AO1	PEMC1067	AC INLET	
⚠	BKT1	PQ21649-1-4	TRANS BRACKET	
⚠	FC1	PEMC0965	FUSE CLIP,F1 J315E J318E	
⚠		PEMC0965-Z	FUSE CLIP,F1 J315EG	
⚠	FC2	PEMC0965	FUSE CLIP,F1 J315E J318E	
⚠		PEMC0965-Z	FUSE CLIP,F1 J315EG	
	HS1	PQ45788-1-1	HEAT SINK,Q1	
⚠	LF1	PELN0885	LINE FILTER J315EG	
⚠	LF2	PELN0876	LINE FILTER	
	SCW1	SDST3006Z	SCREW,X3 B0ARD-BKT	
	SCW2	SDSB3008M	SCREW,INLET-BKT	
	SCW3	SDST3006Z	SCREW,Q1	
	CN1	PEMC0978-111	B TO B CONNECTOR,(1-11) MAIN	
⚠	CP1	ICP-N20	CIRCUIT PROTECTOR	
⚠	F1	QMF51E2-1R25	FUSE	T1.2A

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MAIN BOARD ASSEMBLY <03>

PWBA1	PB10834D1	MAIN BOARD ASSEMBLY,J315EG	
	PB10834B1-01	MAIN BOARD ASSEMBLY,J315E	
	PB10834A1-01	MAIN BOARD ASSEMBLY,J318E	
JA703	PEMC1066	CONNECTOR,VPS/PDC J315E	
JA704	PU60612	MINI JACK,R.PAUSE	
CN201	PEMC1055-019	CONNECTOR,(1-19) PRE/REC	
CN301	PU60910-4	CONNECTOR,(1-4) A/C HEAD	
CN302	PU60910-2	CONNECTOR,(1-2) FE HEAD	
CN401	PU60910-3	CONNECTOR,(1-3) CTL HEAD	
CN402	PEMC0915-004	FFC CONNECTOR,(1-4) DRUM MOTO	
CN601	PEMC0915-018	FFC CONNECTOR,(1-18) DECK TER	
CN602	PU59555-7	CONNECTOR,(1-7) JOG	
CN603	PU60910-7	CONNECTOR,(1-7) PDC J318E	
CN711	PEMC0969-105	B TO B CONNECTOR,(1-5)TERMIN J318E	
CN712	PEMC0969-115	B TO B CONNECTOR,(1-15)TERMINAL	
CN713	PEMC0969-109	B TO B CONNECTOR,(1-9)TERMINAL	
CN801	PEMC0975-011	FLOATING B TO B,(1-11) SW REG	
CN802	PEMC0915-009	FFC CONNECTOR,(1-9) FRONT	
CN810	PEMC0915-009	FFC CONNECTOR,(1-9) FRONT J318E	

#⚠ REF No.	PART No.	PART NAME, DESCRIPTION	
		– TUNER SECTION –	
⚠ RF1	PERF0157	RF CONVERTER	
⚠ TNR1	PERF0135	UHF/VHF TUNER	
⚠ TNR2	PERF0124-03	IF UNIT	
Q1	DTC114EU	TRANSISTOR	
Q2	2SB810H,J	TRANSISTOR	
Q3	2SD1450S,T	TRANSISTOR	
Q11	2SD1450S,T	TRANSISTOR	
Q12	2SK381(C)	FE TRANSISTOR	
Q13	DTC144EU	TRANSISTOR	
Q14	2SC4081(RS)	TRANSISTOR	
Q15	2SA1576(RS)	TRANSISTOR	
Q16	2SC4081(RS)	TRANSISTOR	
D1	MTZ33CT-77	ZENER DIODE	
D2	1SS133	DIODE	
D3	1SS133	DIODE	
D4	1SS133	DIODE	
R1	QRSA08J-152YN	RESISTOR	1.5kΩ,1/10W
R2	QRSA08J-153YN	RESISTOR	15kΩ,1/10W
R3	QRSA08J-331YN	RESISTOR	330Ω,1/10W
R28	QRSA08J-222YN	RESISTOR	2.2kΩ,1/10W
R29	QRSA08J-103YN	RESISTOR	10kΩ,1/10W
R30	QRSA08J-105YN	RESISTOR	1MΩ,1/10W
R31	QRSA08J-683YN	RESISTOR	68kΩ,1/10W
R32	QRSA08J-393YN	RESISTOR	39kΩ,1/10W
R33	QRSA08J-821YN	RESISTOR	820Ω,1/10W
R34	QRSA08J-222YN	RESISTOR	2.2kΩ,1/10W
R35	QRSA08J-223YN	RESISTOR	22kΩ,1/10W
R36	QRSA08J-153YN	RESISTOR	15kΩ,1/10W
R37	QRSA08J-103YN	RESISTOR	10kΩ,1/10W
R38	QRSA08J-682YN	RESISTOR	6.8kΩ,1/10W
R39	QRSA08J-123YN	RESISTOR	12kΩ,1/10W
R42	QRSA08J-681YN	RESISTOR	680Ω,1/10W
C1	QETC1CM-336	E CAPACITOR	33μF,16V
C6	QETC1CM-106	E CAPACITOR	10μF,16V
C7	QETC1HM-106	E CAPACITOR	10μF,50V
C8	QCYA1HK-102	CAPACITOR	0.001μF,50V
C9	QCYA1HK-102	CAPACITOR	0.001μF,50V
C10	QCYA1HK-471	CAPACITOR	470pF,50V
C13	QCYA1HK-222	CAPACITOR	0.0022μF,50V
C14	QCFB1EZ-223	CAPACITOR	0.022μF,25V
C15	QETC1HM-474	E CAPACITOR	0.47μF,50V
C19	QCXB1CM-222	CAPACITOR	0.0022μF,16V
L1	PU59152-6R8J	COIL	6.8μH
T1	PELN0806	COIL	
WR1	PW30402-BB08M	COAXIAL CABLE	
		– VPS SECTION(J315EG ONLY) –	
IC101	SAA4700	IC	
R101	QRSA08J-822YN	RESISTOR	8.2kΩ,1/10W
R102	QRSA08J-753YN	RESISTOR	75kΩ,1/10W
R103	QRSA08J-472YN	RESISTOR	4.7kΩ,1/10W
C101	QCFA1HZ-223	CAPACITOR	0.022μF,50V
C102	QCYA1HK-472	CAPACITOR	0.0047μF,50V
C103	QFV11HJ-104	F CAPACITOR	0.1μF,50V
C104	QCYA1HJ-102	CAPACITOR	0.001μF,50V
C105	QCYA1HK-472	CAPACITOR	0.0047μF,50V
C106	QFV11HJ-104	F CAPACITOR	0.1μF,50V
C107	QCYA1HJ-471	CAPACITOR	470pF,50V

#⚠ REF No.	PART No.	PART NAME, DESCRIPTION	
		– VIDEO SECTION –	
Q279	DTC114WU	TRANSISTOR	
D202	1SS133	DIODE	
D250	1SS133	DIODE	
R209	QRSA08J-562YN	RESISTOR	5.6kΩ,1/10W
R210	QRSA08J-562YN	RESISTOR	5.6kΩ,1/10W
R211	QRSA08J-363YN	RESISTOR	36kΩ,1/10W
R214	QRSA08J-222YN	RESISTOR	2.2kΩ,1/10W
R216	QRSA08J-0R0Y	RESISTOR	0Ω,1/10W
R220	QRSA08J-0R0Y	RESISTOR	0Ω,1/10W
R221	QRSA08J-561YN	RESISTOR	560Ω,1/10W
R222	QRD161J-102	RESISTOR	1kΩ,1/6W
R230	QRSA08J-562YN	RESISTOR	5.6kΩ,1/10W
C205	QEP61EM-475	NP E CAPACITOR	4.7μF,25V
C207	QCFA1HZ-103	CAPACITOR	0.01μF,50V
C208	QCFA1HZ-103	CAPACITOR	0.01μF,50V
		– AUDIO SECTION –	
IC301	BA7795LS	IC	
	or XRA7795LS	IC	
IC302	BA15218	IC,J315E J315EG	
	or XRA15218	IC,J315E J315EG	
Q303	2SC1740S(QR)	TRANSISTOR	
	or 2SC3199(YG)-TJK	TRANSISTOR	
Q304	2SA933S(QR)	TRANSISTOR	
Q305	2SA933S(QR)	TRANSISTOR	
D303	1SS133	DIODE,J318E	
R319	QRSA08J-102YN	RESISTOR	1kΩ,1/10W
R320	QRSA08J-102YN	RESISTOR	1kΩ,1/10W
R322	QRSA08J-273YN	RESISTOR	27kΩ,1/10W
R323	QRSA08J-682YN	RESISTOR	6.8kΩ,1/10W
R324	QRSA08J-682YN	RESISTOR	6.8kΩ,1/10W
R325	QRSA08J-123YN	RESISTOR	12kΩ,1/10W
R326	QRSA08J-3R3YN	RESISTOR	3.3Ω,1/10W
R327	QRD161J-820	RESISTOR	82Ω,1/6W
R328	QRD161J-393	RESISTOR	39kΩ,1/6W
R329	QRSA08J-123YN	RESISTOR	12kΩ,1/10W
R330	QRSA08J-562YN	RESISTOR	5.6kΩ,1/10W
R331	QRSA08J-122YN	RESISTOR	1.2kΩ,1/10W
R332	QRSA08J-271YN	RESISTOR	270Ω,1/10W
R333	QRSA08J-153YN	RESISTOR	15kΩ,1/10W
R335	QRD161J-223	RESISTOR	22kΩ,1/6W
R336	QRD161J-820	RESISTOR	82Ω,1/6W
R337	QRSA08J-274YN	RESISTOR	270kΩ,1/10W
R338	QRSA08J-822YN	RESISTOR	8.2kΩ,1/10W
R340	QRSA08J-472YN	RESISTOR	4.7kΩ,1/10W
R341	QRSA08J-682YN	RESISTOR	6.8kΩ,1/10W
R342	QRSA08J-475YN	RESISTOR	4.7MΩ,1/10W
R343	QRSA08J-183YN	RESISTOR	18kΩ,1/10W
R344	QRD161J-393	RESISTOR	39kΩ,1/6W
R345	QRSA08J-153YN	RESISTOR	15kΩ,1/10W
R346	QRSA08J-153YN	RESISTOR	15kΩ,1/10W
R347	QRSA08J-473YN	RESISTOR	47kΩ,1/10W
R348	QRD161J-183	RESISTOR	18kΩ,1/6W
R349	QRD161J-103	RESISTOR,J318E	10kΩ,1/6W
R350	QRD161J-123	RESISTOR	12kΩ,1/6W
R351	QRSA08J-473YN	RESISTOR	47kΩ,1/10W
R352	QRD161J-273	RESISTOR	27kΩ,1/6W
R353	QRSA08J-221YN	RESISTOR	220Ω,1/10W
R354	QRD161J-102	RESISTOR	1kΩ,1/6W

#⚠	REF No.	PART No.	PART NAME, DESCRIPTION	
	R355	QRD161J-102	RESISTOR	1kΩ,1/6W
	R394	QRSA08J-332YN	RESISTOR,J315E J315EG	3.3kΩ,1/10W
	R395	QRSA08J-102YN	RESISTOR,J315E J315EG	1kΩ,1/10W
	C313	QCYA1HK-331	CAPACITOR	330pF,50V
	C314	QFN31HJ-823	F CAPACITOR	0.082μF,50V
	C315	QETC1HM-106	E CAPACITOR	10μF,50V
	C316	QCYA1HK-472	CAPACITOR	0.0047μF,50V
	C317	QCYA1HK-223	CAPACITOR	0.022μF,50V
	C319	QETC1CM-476	E CAPACITOR	47μF,16V
	C320	QCC11EJ-153	CAPACITOR	0.015μF,25V
	C321	QETC1HM-105	E CAPACITOR	1μF,50V
	C323	QCBB1HJ-681	CAPACITOR	680pF,50V
	C324	QEK61EM-475	E CAPACITOR	4.7μF,25V
	C325	QETC1CM-336	E CAPACITOR	33μF,16V
	C326	QCYA1HK-123	CAPACITOR	0.012μF,50V
	C327	QCYA1EK-223	CAPACITOR	0.022μF,25V
	C328	QETC1EM-226	E CAPACITOR	22μF,25V
	C329	QCYA1EK-223	CAPACITOR	0.022μF,25V
	C330	QCYA1EK-223	CAPACITOR,J318E	0.022μF,25V
	C331	QETC1HM-106	E CAPACITOR	10μF,50V
	C347	QETC1HM-106	E CAPACITOR	10μF,50V
	C350	QETC1EM-476	E CAPACITOR,315E J315EG	47μF,25V
	L303	PU58308-123J	COIL	12mH
⚠	T301	PELN0832	OSC TRANSFORMER	

– SERVO SECTION –

IC401	JCP0039	IC	
D401	1SS133	DIODE	
D402	1SS133	DIODE	
D403	1SS133	DIODE	
R401	QRSA08J-561YN	RESISTOR	560Ω,1/10W
R402	QRSA08J-102YN	RESISTOR	1kΩ,1/10W
R403	QRSA08J-105YN	RESISTOR	1MΩ,1/10W
R404	QRSA08J-103YN	RESISTOR	10kΩ,1/10W
R405	QRSA08J-474YN	RESISTOR	470kΩ,1/10W
R406	QRSA08J-102YN	RESISTOR	1kΩ,1/10W
R407	QRD161J-102	RESISTOR	1kΩ,1/6W
R408	QRD161J-102	RESISTOR	1kΩ,1/6W
R409	QRD161J-102	RESISTOR	1kΩ,1/6W
R410	QRSA08J-684YN	RESISTOR	680kΩ,1/10W
R411	QRSA08J-225YN	RESISTOR	2.2MΩ,1/10W
R412	QRSA08J-473YN	RESISTOR	47kΩ,1/10W
R413	QRD161J-222	RESISTOR	2.2kΩ,1/6W
R414	QRD161J-122	RESISTOR	1.2kΩ,1/6W
R415	QRSA08J-332YN	RESISTOR	3.3kΩ,1/10W
R416	QRSA08J-223YN	RESISTOR	22kΩ,1/10W
R417	QRSA08J-223YN	RESISTOR	22kΩ,1/10W
R418	QRSA08J-105YN	RESISTOR	1MΩ,1/10W
R419	QRD161J-273	RESISTOR	27kΩ,1/6W
R421	QRSA08J-274YN	RESISTOR	270kΩ,1/10W
R423	QRSA08J-105YN	RESISTOR	1MΩ,1/10W
R424	QRSA08J-273YN	RESISTOR	27kΩ,1/10W
R429	QRSA08J-393YN	RESISTOR	39kΩ,1/10W
R430	QRSA08J-335YN	RESISTOR	3.3MΩ,1/10W
R431	QRSA08J-274YN	RESISTOR	270kΩ,1/10W
R432	QRSA08J-822YN	RESISTOR	8.2kΩ,1/10W
R436	QRSA08J-102YN	RESISTOR	1kΩ,1/10W
R438	QRD161J-104	RESISTOR	100kΩ,1/6W
R439	QRSA08J-153YN	RESISTOR	15kΩ,1/10W
R440	QRSA08J-561YN	RESISTOR	560Ω,1/10W
R445	QRSA08J-104YN	RESISTOR	100kΩ,1/10W

#⚠	REF No.	PART No.	PART NAME, DESCRIPTION	
	C401	QCYA1HK-102	CAPACITOR	0.001μF,50V
	C402	QETC1EM-226	E CAPACITOR	22μF,25V
	C403	QETC1EM-226	E CAPACITOR	22μF,25V
	C404	QCSA1HJ-181	CAPACITOR	180pF,50V
	C405	QCYA1HK-102	CAPACITOR	0.001μF,50V
	C407	QCYA1HK-102	CAPACITOR	0.001μF,50V
	C408	QFV11HJ-563	F CAPACITOR	0.056μF,50V
	C409	QCBB1HJ-102	CAPACITOR	0.001μF,50V
	C410	QCYA1EK-103	CAPACITOR	0.01μF,25V
	C411	QCYA1EK-103	CAPACITOR	0.01μF,25V
	C412	QETC1HM-106	E CAPACITOR	10μF,50V
	C413	QFV11HJ-224	F CAPACITOR	0.22μF,50V
	C414	QCYA1EK-223	CAPACITOR	0.022μF,25V
	C415	QETC1HM-475	E CAPACITOR	4.7μF,50V
	C416	QETC1HM-475	E CAPACITOR	4.7μF,50V
	C417	QETC1HM-106	E CAPACITOR	10μF,50V
	C418	QETC1HM-106	E CAPACITOR	10μF,50V
	C419	QCC31CK-223	CAPACITOR	0.022μF,16V
	C420	QFV11HJ-334	F CAPACITOR	0.33μF,50V
	C421	QCSA1HJ-471	CAPACITOR	470pF,50V
	C422	QCYA1HK-102	CAPACITOR	0.001μF,50V
⚠	CP401	ICP-N15	CIRCUIT PROTECTOR	

– SYSTEM CONTROL SECTION –

IC601	HD6433927A83F	IC	
IC602	AT93C56-10PC	IC	
	or S-2922AI10	IC	
	or 93LC56B/P	IC	
	or 93LC56/P	IC	
	or 93C56/P	IC	
IC603	MM1255XF	IC	
Q601	DTC124EU	CHIP D TRANSISTOR	
Q602	DTC124EU	CHIP D TRANSISTOR	
Q603	DTC124EU	CHIP D TRANSISTOR	
Q604	DTC124EU	CHIP D TRANSISTOR	
Q605	DTC143ZU	TRANSISTOR	
Q608	DTC124EU	TRANSISTOR	
Q610	DTC114TU	TRANSISTOR	
Q611	2SB1256	TRANSISTOR	
Q613	DTC114WU	TRANSISTOR,J315E J315EG	
D601	11ES2	DIODE	
D602	11ES2	DIODE	
D605	1SS133	DIODE	
D606	1SS133	DIODE	
D607	1SS133	DIODE	
D610	1SS133	DIODE	
D611	1SS133	DIODE	
D612	1SS133	DIODE	
D670	1SS133	DIODE	
D671	1SS133	DIODE	
D672	11ES2	DIODE	
D673	11ES2	DIODE	
R601	QRSA08J-472YN	RESISTOR	4.7kΩ,1/10W
R602	QRSA08J-472YN	RESISTOR	4.7kΩ,1/10W
R603	QRSA08J-102YN	RESISTOR	1kΩ,1/10W
R604	QRSA08J-152YN	RESISTOR	1.5kΩ,1/10W
R606	QRD161J-102	RESISTOR	1kΩ,1/6W
R607	QRD161J-472	RESISTOR	4.7kΩ,1/6W
R608	QRSA08J-472YN	RESISTOR	4.7kΩ,1/10W
R609	QRSA08J-0R0Y	RESISTOR,J318E	0Ω,1/10W
	QRSA08J-271YN	RESISTOR,J315E	270Ω,1/10W

#⚠ REF No.	PART No.	PART NAME, DESCRIPTION	
R610	QRSA08J-472YN	RESISTOR	4.7kΩ,1/10W
R611	QRSA08J-472YN	RESISTOR	4.7kΩ,1/10W
R612	QRSA08J-472YN	RESISTOR	4.7kΩ,1/10W
R613	QRSA08J-472YN	RESISTOR	4.7kΩ,1/10W
R614	QRSA08J-472YN	RESISTOR	4.7kΩ,1/10W
R615	QRSA08J-102YN	RESISTOR	1kΩ,1/10W
R616	QRSA08J-332YN	RESISTOR	3.3kΩ,1/10W
R617	QRSA08J-332YN	RESISTOR	3.3kΩ,1/10W
R619	QRSA08J-472YN	RESISTOR	4.7kΩ,1/10W
R620	QRSA08J-271YN	RESISTOR	270Ω,1/10W
R621	QRSA08J-271YN	RESISTOR	270Ω,1/10W
R622	QRD161J-472	RESISTOR	4.7kΩ,1/6W
R623	QRSA08J-472YN	RESISTOR	4.7kΩ,1/10W
R624	QRSA08J-472YN	RESISTOR	4.7kΩ,1/10W
R625	QRSA08J-472YN	RESISTOR	4.7kΩ,1/10W
R626	QRD161J-472	RESISTOR	4.7kΩ,1/6W
R627	QRD161J-102	RESISTOR	1kΩ,1/6W
R628	QRSA08J-102YN	RESISTOR	1kΩ,1/10W
R629	QRSA08J-102YN	RESISTOR	1kΩ,1/10W
R630	QRD161J-102	RESISTOR	1kΩ,1/6W
R631	QRD161J-272	RESISTOR	2.7kΩ,1/6W
R632	QRD161J-102	RESISTOR	1kΩ,1/6W
R633	QRSA08J-102YN	RESISTOR	1kΩ,1/10W
R634	QRSA08J-472YN	RESISTOR	4.7kΩ,1/10W
R635	QRSA08J-472YN	RESISTOR	4.7kΩ,1/10W
R636	QRSA08J-102YN	RESISTOR	1kΩ,1/10W
R637	QRD161J-472	RESISTOR	4.7kΩ,1/6W
R638	QRD161J-472	RESISTOR	4.7kΩ,1/6W
R639	QRD161J-0R0	RESISTOR	0Ω,1/6W
R640	QRSA08J-0R0Y	RESISTOR	0Ω,1/10W
R641	QRSA08J-472YN	RESISTOR	4.7kΩ,1/10W
R642	QRSA08J-102YN	RESISTOR	1kΩ,1/10W
R643	QRD161J-472	RESISTOR	4.7kΩ,1/6W
R644	QRD161J-472	RESISTOR	4.7kΩ,1/6W
R645	QRSA08J-472YN	RESISTOR	4.7kΩ,1/10W
R646	QRSA08J-103YN	RESISTOR	10kΩ,1/10W
R647	QRSA08J-103YN	RESISTOR	10kΩ,1/10W
R648	QRD161J-102	RESISTOR	1kΩ,1/6W
R649	QRD161J-103	RESISTOR	10kΩ,1/6W
R650	QRSA08J-103YN	RESISTOR	10kΩ,1/10W
R651	QRSA08J-103YN	RESISTOR	10kΩ,1/10W
R652	QRSA08J-103YN	RESISTOR	10kΩ,1/10W
R653	QRSA08J-0R0Y	RESISTOR	0Ω,1/10W
R654	QRSA08J-103YN	RESISTOR	10kΩ,1/10W
R655	QRSA08J-333YN	RESISTOR	33kΩ,1/10W
R656	QRSA08J-473YN	RESISTOR	47kΩ,1/10W
R657	QRSA08J-471YN	RESISTOR	470Ω,1/10W
R658	QRSA08J-333YN	RESISTOR	33kΩ,1/10W
R659	QRSA08J-472YN	RESISTOR	4.7kΩ,1/10W
R660	QRSA08J-103YN	RESISTOR	10kΩ,1/10W
R661	QRD161J-103	RESISTOR	10kΩ,1/6W
R662	QRSA08J-472YN	RESISTOR	4.7kΩ,1/10W
R663	QRD161J-103	RESISTOR	10kΩ,1/6W
R664	QRD161J-103	RESISTOR	10kΩ,1/6W
R665	QRSA08J-105YN	RESISTOR	1MΩ,1/10W
R666	QRSA08J-103YN	RESISTOR	10kΩ,1/10W
R667	QRSA08J-104YN	RESISTOR	100kΩ,1/10W
R669	QRSA08J-104YN	RESISTOR	100kΩ,1/10W
R670	QRSA08J-123YN	RESISTOR	12kΩ,1/10W
R671	QRSA08J-333YN	RESISTOR	33kΩ,1/10W
R672	QRSA08J-103YN	RESISTOR	10kΩ,1/10W
R673	QRSA08J-103YN	RESISTOR	10kΩ,1/10W

#⚠ REF No.	PART No.	PART NAME, DESCRIPTION	
R674	QRSA08J-153YN	RESISTOR	15kΩ,1/10W
R675	QRSA08J-103YN	RESISTOR	10kΩ,1/10W
R676	QRSA08J-222YN	RESISTOR	2.2kΩ,1/10W
R677	QRSA08J-472YN	RESISTOR	4.7kΩ,1/10W
C606	QCSA1HJ-121	CAPACITOR	120pF,50V
C607	QCSA1HJ-121	CAPACITOR	120pF,50V
C610	QETN0JM-228S	E CAPACITOR	2200μF,6.3V
C611	QCFA1HZ-103	CAPACITOR	0.01μF,50V
C612	QETC0JM-107	E CAPACITOR	100μF,6.3V
C613	QCSA1HJ-270	CAPACITOR	27pF,50V
C614	QAT3120-450	TRIM CAPACITOR,TIMER CLOCK	
C615	QCFA1HZ-103	CAPACITOR	0.01μF,50V
C616	QETC1CM-106	E CAPACITOR	10μF,16V
C617	QCFA1HZ-103	CAPACITOR	0.01μF,50V
C619	QCC11EK-104	CAPACITOR	0.1μF,25V
C621	QETC1CM-106	E CAPACITOR	10μF,16V
C622	QETC1CM-106	E CAPACITOR	10μF,16V
L601	PELN0530-101JZ	COIL	100μH
⚠ CF601	PEVB0497	RESONATOR	
⚠ X601	PEVB0422	CRYSTAL RESONATOR	
⚠ TH601	PESC1041	POSI THERMISTOR	
⚠ CP601	ICP-N25	CIRCUIT PROTECTOR	
⚠ CP602	ICP-N20	CIRCUIT PROTECTOR	
		– SWITCHING REGULATOR SECTION –	
Q801	2SC3616(MLK)	TRANSISTOR	
Q802	2SD2166	TRANSISTOR	
Q803	2SC1740S	TRANSISTOR	
	or 2SC2785(J-E)	TRANSISTOR	
Q804	DTA114EU	TRANSISTOR	
Q805	2SD2144S(UVW)	TRANSISTOR	
D802	RD5.1JSB2	DIODE	
D803	1SS133	DIODE	
D804	HZ15CP	ZENER DIODE	
R801	QRSA08J-471YN	RESISTOR	470Ω,1/10W
R802	QRD161J-473	RESISTOR	47kΩ,1/6W
R803	QRSA08J-103YN	RESISTOR	10kΩ,1/10W
R804	QRSA08J-471YN	RESISTOR	470Ω,1/10W
R805	QVPA606-471Z	V RESISTOR,SWD 5V	
R806	QRD161J-471	RESISTOR	470Ω,1/6W
R808	QRSA08J-102YN	RESISTOR	1kΩ,1/10W
R811	QRSA08J-102YN	RESISTOR	1kΩ,1/10W
R812	QRSA08J-511YN	RESISTOR	510Ω,1/10W
R813	QRD161J-471	RESISTOR	470Ω,1/6W
R815	QRG02DJ-102X	OMF RESISTOR	1kΩ,2W
C801	QETC0JM-107	E CAPACITOR	100μF,6.3V
C802	QETC1CM-106	E CAPACITOR	10μF,16V
C803	QETC1CM-107	E CAPACITOR	100μF,16V
C804	QETC0JM-226	E CAPACITOR	22μF,6.3V
C805	QETC0JM-107	E CAPACITOR	100μF,6.3V
C806	QFLA1HJ-102Z	F CAPACITOR	0.001μF,50V
L801	PU48530-101K	COIL	100μH
⚠ CP801	ICP-N20	CIRCUIT PROTECTOR	
		– TERMINAL BOARD SECTION –	
Q701	2SB810H,J	TRANSISTOR	
Q702	2SC3616(MLK)	TRANSISTOR	
D701	1SS133	DIODE	
D702	1SS133	DIODE	
D703	1SS133	DIODE,J318E	

#⚠ REF No.	PART No.	PART NAME, DESCRIPTION	
D704	1SS133	DIODE,J315E J315EG	
R701	QRSA08J-393YN	RESISTOR	39kΩ,1/10W
R702	QRSA08J-102YN	RESISTOR	1kΩ,1/10W
R706	QRG01DJ-331X	OMF RESISTOR	330Ω,1W
R707	QRSA08J-471YN	RESISTOR	470Ω,1/10W
C701	QCFA1HZ-103	CAPACITOR	0.01μF,50V
C704	QETC1CM-107	E CAPACITOR	100μF,16V
C705	QETC1CM-106	E CAPACITOR	10μF,16V
L701	PU48530-100K	COIL	10μH
L702	PU59152-100J	COIL	10μH

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VIDEO UNIT BOARD ASSEMBLY <05>

PWBA1	PB10745E-03	VIDEO UNIT BOARD ASSEMBLY	
IC1	TL8839P	IC	
IC2	JCP0035-2	IC	
Q1	2SA1576(QRS)	TRANSISTOR	
Q2	2SC4081(QRS)	TRANSISTOR	
Q3	2SA1576(QRS)	TRANSISTOR	
Q4	2SC4081(QRS)	TRANSISTOR	
Q5	2SC4081(QRS)	TRANSISTOR	
Q6	2SC4081(QRS)	TRANSISTOR	
Q7	2SC4081(QRS)	TRANSISTOR	
Q8	DTC114WU	TRANSISTOR	
Q9	2SC4081(QRS)	TRANSISTOR	
Q10	2SA1576(QRS)	TRANSISTOR	
Q11	DTC144WU	TRANSISTOR	
Q12	DTC144WU	TRANSISTOR	
Q13	DTA124EU	TRANSISTOR	
Q14	2SA1576(QRS)	TRANSISTOR	
Q15	2SC4081(QRS)	TRANSISTOR	
D1	1SS133	DIODE	
D2	1SS133	DIODE	
D3	1SS133	DIODE	
D4	1SS133	DIODE	
D5	1SS133	DIODE	
D7	1SS292	DIODE	
R1	NRSA63J-681N	RESISTOR	680Ω,1/16W
R2	NRSA63J-475N	RESISTOR	4.7MΩ,1/16W
R3	NRSA63J-361N	RESISTOR	360Ω,1/16W
R4	NRSA63J-103N	RESISTOR	10kΩ,1/16W
R5	NRSA63J-102N	RESISTOR	1kΩ,1/16W
R6	NRSA63J-475N	RESISTOR	4.7MΩ,1/16W
R7	NRSA63J-681N	RESISTOR	680Ω,1/16W
R8	NRSA63J-102N	RESISTOR	1kΩ,1/16W
R9	NRSA63J-102N	RESISTOR	1kΩ,1/16W
R10	NRSA63J-621N	RESISTOR	620Ω,1/16W
R11	NRSA63J-331N	RESISTOR	330Ω,1/16W
R12	NRSA63J-182N	RESISTOR	1.8kΩ,1/16W
R13	NRSA63J-222N	RESISTOR	2.2kΩ,1/16W
R14	NRSA63J-102N	RESISTOR	1kΩ,1/16W
R15	NRSA63J-221N	RESISTOR	220Ω,1/16W
R16	NRSA63J-332N	RESISTOR	3.3kΩ,1/16W
R17	NRSA63J-392N	RESISTOR	3.9kΩ,1/16W
R18	NVP1301-152N	V RESISTOR,NC BALANCE	
R19	NRSA63J-222N	RESISTOR	2.2kΩ,1/16W
R20	NRSA63J-681N	RESISTOR	680Ω,1/16W

#⚠ REF No.	PART No.	PART NAME, DESCRIPTION	
R21	NRSA63J-102N	RESISTOR	1kΩ,1/16W
R22	NRSA63J-152N	RESISTOR	1.5kΩ,1/16W
R23	NRSA63J-272N	RESISTOR	2.7kΩ,1/16W
R24	NRSA63J-821N	RESISTOR	820Ω,1/16W
R25	NVP1301-472N	V RESISTOR,PB Y LEVEL	
R26	NRSA63J-333N	RESISTOR	33kΩ,1/16W
R27	NRSA63J-561N	RESISTOR	560Ω,1/16W
R28	NVP1301-223N	V RESISTOR,CARRIER	
R29	NVP1301-103N	V RESISTOR,DEVIATION	
R30	NRSA63J-562N	RESISTOR	5.6kΩ,1/16W
R31	NRSA63J-122N	RESISTOR	1.2kΩ,1/16W
R32	NRSA63J-562N	RESISTOR	5.6kΩ,1/16W
R33	NRSA63J-561N	RESISTOR	560Ω,1/16W
R34	NRSA63J-102N	RESISTOR	1kΩ,1/16W
R35	NRSA63J-272N	RESISTOR	2.7kΩ,1/16W
R36	NRSA63J-103N	RESISTOR	10kΩ,1/16W
R37	NRSA63G-511N	RESISTOR	510Ω,1/16W
R38	NRSA63J-103N	RESISTOR	10kΩ,1/16W
R39	NRSA63J-102N	RESISTOR	1kΩ,1/16W
R40	NRSA63J-102N	RESISTOR	1kΩ,1/16W
R41	NRSA63J-102N	RESISTOR	1kΩ,1/16W
R42	NVP1301-153N	V RESISTOR,EE Y LEVEL	
R43	NRSA63J-823N	RESISTOR	82kΩ,1/16W
R44	NRSA63J-334N	RESISTOR	330kΩ,1/16W
R45	NVP1301-103N	V RESISTOR,W/D CLIP	
R46	NRSA63J-103N	RESISTOR	10kΩ,1/16W
R47	NRSA63J-434N	RESISTOR	430kΩ,1/16W
R48	NRSA63J-562N	RESISTOR	5.6kΩ,1/16W
R49	NRSA63J-105N	RESISTOR	1MΩ,1/16W
R50	NRSA63J-331N	RESISTOR	330Ω,1/16W
R51	NRSA63J-102N	RESISTOR	1kΩ,1/16W
R52	NVP1301-222N	V RESISTOR,REC COLOR LEVEL	
R53	NRSA63J-102N	RESISTOR	1kΩ,1/16W
R54	NRSA63J-271N	RESISTOR	270Ω,1/16W
R55	NRSA63J-333N	RESISTOR	33kΩ,1/16W
R56	NRSA63J-333N	RESISTOR	33kΩ,1/16W
R57	NRSA63J-102N	RESISTOR	1kΩ,1/16W
R58	NRSA63J-102N	RESISTOR	1kΩ,1/16W
R59	NRSA63J-102N	RESISTOR	1kΩ,1/16W
R60	NRSA63J-132N	RESISTOR	1.3kΩ,1/16W
C1	NCS31HJ-221A	CAPACITOR	220pF,50V
C2	NCS31HG-681A	CAPACITOR	680pF,50V
C3	NCS31HG-331A	CAPACITOR	330pF,50V
C4	NCS31HJ-220A	CAPACITOR	22pF,50V
C5	NCF31HZ-103A	CAPACITOR	0.01μF,50V
C6	NCS31HJ-220A	CAPACITOR	22pF,50V
C8	NCS31HJ-680A	CAPACITOR	68pF,50V
C9	NCS31HG-241A	CAPACITOR	240pF,50V
C10	NCF31HZ-103A	CAPACITOR	0.01μF,50V
C11	NCF31CZ-473A	CAPACITOR	0.047μF,16V
C12	QETC1HM-474	E CAPACITOR	0.47μF,50V
C13	QCVB1CN-103	CAPACITOR	0.01μF,16V
C14	NCF31CZ-104A	CAPACITOR	0.1μF,16V
C15	NCF31CZ-104A	CAPACITOR	0.1μF,16V
C16	NCS31HJ-390A	CAPACITOR	39pF,50V
C17	NCS31HJ-330A	CAPACITOR	33pF,50V
C18	NCS31HJ-200A	CAPACITOR	20pF,50V
C19	QETC0JM-476	E CAPACITOR	47μF,6.3V
C20	NCF31HZ-103A	CAPACITOR	0.01μF,50V
C21	NCS31HJ-330A	CAPACITOR	33pF,50V
C22	QEK61HM-474	E CAPACITOR	0.47μF,50V
C24	QETC1EM-475	E CAPACITOR	4.7μF,25V

#⚠ REF No.	PART No.	PART NAME, DESCRIPTION	
C25	QETC1CM-106	E CAPACITOR	10μF,16V
C26	QETC1AM-226	E CAPACITOR	22μF,10V
C27	QETC1CM-106	E CAPACITOR	10μF,16V
C28	QETC0JM-107	E CAPACITOR	100μF,6.3V
C29	NCF31CZ-104A	CAPACITOR	0.1μF,16V
C30	NCF31HZ-103A	CAPACITOR	0.01μF,50V
C31	NCF31HZ-103A	CAPACITOR	0.01μF,50V
C32	QETC1HM-225	E CAPACITOR	2.2μF,50V
C33	QETC1HM-474	E CAPACITOR	0.47μF,50V
C35	NCS31HG-201A	CAPACITOR	200pF,50V
C36	QETC1EM-475	E CAPACITOR	4.7μF,25V
C37	NCB31EK-223A	CAPACITOR	0.022μF,25V
C38	NCS31HG-130A	CAPACITOR	13pF,50V
C39	NCF31HZ-103A	CAPACITOR	0.01μF,50V
C40	QETC1HM-105	E CAPACITOR	1μF,50V
C41	NCB31EK-223A	CAPACITOR	0.022μF,25V
C42	NCS31HJ-101A	CAPACITOR	100pF,50V
C43	NCS31HJ-390A	CAPACITOR	39pF,50V
C44	QENC1EM-475	NP E CAPACITOR	4.7μF,25V
C45	QETC1EM-475	E CAPACITOR	4.7μF,25V
C46	NCF31CZ-473A	CAPACITOR	0.047μF,16V
C47	QETC1HM-104	E CAPACITOR	0.1μF,50V
C48	QETC1HM-474	E CAPACITOR	0.47μF,50V
C49	NCB31CK-333A	CAPACITOR	0.033μF,16V
C50	NCF31HZ-103A	CAPACITOR	0.01μF,50V
C51	NCF31CZ-104A	CAPACITOR	0.1μF,16V
C52	NCF31HZ-103A	CAPACITOR	0.01μF,50V
C53	NCF31CZ-104A	CAPACITOR	0.1μF,16V
C54	NCB31CK-473A	CAPACITOR	0.047μF,16V
C55	QETC1EM-475	E CAPACITOR	4.7μF,25V
C56	NCS31HJ-5R0A	CAPACITOR	5pF,50V
C57	QETC1HM-105	E CAPACITOR	1μF,50V
C58	NCF31HZ-103A	CAPACITOR	0.01μF,50V
C59	NCF31CZ-104A	CAPACITOR	0.1μF,16V
C60	QETC0JM-107	E CAPACITOR	100μF,6.3V
C61	NCB31HK-103A	CAPACITOR	0.01μF,50V
C62	NCB31HK-182A	CAPACITOR	0.0018μF,50V
C63	NCS31HJ-200A	CAPACITOR	20pF,50V
C64	NCF31CZ-104A	CAPACITOR	0.1μF,16V
C65	NCB31CK-473A	CAPACITOR	0.047μF,16V
C69	NCB31EK-103A	CAPACITOR	0.01μF,25V
C70	NCF31HZ-103A	CAPACITOR	0.01μF,50V
C71	NCF31CZ-104A	CAPACITOR	0.1μF,16V
C72	NCS31HJ-120A	CAPACITOR	12pF,50V
L1	PU59152-121J	COIL	120μH
L2	PU59152-220J	COIL	22μH
L3	PU59152-470J	COIL	47μH
L4	PU59152-820J	COIL	82μH
L5	PU59152-151J	COIL	150μH
L6	PU59153-101K	COIL	100μH
L7	PU59152-390J	COIL	39μH
L8	PU48530-101K	COIL	100μH
L9	PU59152-121J	COIL	120μH
L10	PU59152-150J	COIL	15μH
L11	PU48530-561J	COIL	560μH
L12	PU59152-820J	COIL	82μH
L13	PU59152-101J	COIL	100μH
LPF1	PELN0477	LOW PASS FILTER	
LPF2	PELN0892	LOW PASS FILTER	
DL1	PEVB0515	COMB FILTER	
⚠ X1	PEVB0386	CRYSTAL RESONATOR	
CN1	PEMC0712-111	PIN HEADER,(2-12) MAIN	
CN2	PEMC0712-112	PIN HEADER,(1-12) MAIN	
CN3	PEMC0712-111	PIN HEADER,(1-11) MAIN	

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TERMINAL BOARD ASSEMBLY <06>

– TERMINAL BOARD ASSY(HR-J315E,HR-J315EG) –

PWBA1	PB10852C	TERMINAL BOARD ASSEMBLY,J315EG	
	PB10852A	TERMINAL BOARD ASSEMBLY,J315E	
IC1	BA7631	IC	
IC102	BA7630S	IC	
Q101	2SA1267(YG)JK	TRANSISTOR	
	or 2SA933S(RS)	TRANSISTOR	
Q102	2SA1267(YG)JK	TRANSISTOR	
	or 2SA933S(RS)	TRANSISTOR	
Q103	2SA1267(YG)JK	TRANSISTOR	
	or 2SA933S(RS)	TRANSISTOR	
Q104	2SA1267(YG)JK	TRANSISTOR	
	or 2SA933S(RS)	TRANSISTOR	
Q105	2SC1740S(RS)	TRANSISTOR	
	or 2SC3199(GB)JK	TRANSISTOR	
	or 2SC536SPA(FG)	TRANSISTOR	
Q106	2SC1740S(RS)	TRANSISTOR	
	or 2SC3199(GB)JK	TRANSISTOR	
	or 2SC536SPA(FG)	TRANSISTOR	
Q107	2SA1267(YG)JK	TRANSISTOR	
	or 2SA933S(RS)	TRANSISTOR	
R3	QRSA08J-221YN	RESISTOR	220Ω,1/10W
R7	QRSA08J-562YN	RESISTOR	5.6kΩ,1/10W
R8	QRSA08J-562YN	RESISTOR	5.6kΩ,1/10W
R9	QRSA08J-221YN	RESISTOR	220Ω,1/10W
R13	QRSA08J-562YN	RESISTOR	5.6kΩ,1/10W
R14	QRSA08J-562YN	RESISTOR	5.6kΩ,1/10W
R15	QRSA08J-472YN	RESISTOR	4.7kΩ,1/10W
R16	QRSA08J-472YN	RESISTOR	4.7kΩ,1/10W
R17	QRSA08J-472YN	RESISTOR	4.7kΩ,1/10W
R18	QRSA08J-472YN	RESISTOR	4.7kΩ,1/10W
R101	QRD121J-391S	RESISTOR	390Ω,1/2W
R102	QRSA08J-750YN	RESISTOR	75Ω,1/10W
R103	QRD121J-391S	RESISTOR	390Ω,1/2W
R104	QRSA08J-750YN	RESISTOR	75Ω,1/10W
R105	QRSA08J-102YN	RESISTOR	1kΩ,1/10W
R106	QRSA08J-102YN	RESISTOR	1kΩ,1/10W
R107	QRSA08J-153YN	RESISTOR	15kΩ,1/10W
R108	QRSA08J-103YN	RESISTOR	10kΩ,1/10W
R109	QRD161J-102	RESISTOR	1kΩ,1/6W
R110	QRSA08J-102YN	RESISTOR	1kΩ,1/10W
R111	QRSA08J-222YN	RESISTOR	2.2kΩ,1/10W
R112	QRSA08J-102YN	RESISTOR	1kΩ,1/10W
R113	QRSA08J-152YN	RESISTOR	1.5kΩ,1/10W
R114	QRSA08J-750YN	RESISTOR	75Ω,1/10W
R115	QRSA08J-750YN	RESISTOR	75Ω,1/10W
R116	QRSA08J-102YN	RESISTOR	1kΩ,1/10W
R117	QRSA08J-335YN	RESISTOR	3.3MΩ,1/10W
R119	QRD161J-0R0	RESISTOR	0Ω,1/6W
C1	QETC1AM-476	E CAPACITOR	47μF,10V
C2	QETC1CM-476	E CAPACITOR	47μF,16V

#⚠	REF No.	PART No.	PART NAME, DESCRIPTION	
	C3	QEK61CM-106	E CAPACITOR	10μF,16V
	C4	QEK61CM-106	E CAPACITOR	10μF,16V
	C5	QEK61CM-106	E CAPACITOR	10μF,16V
	C6	QEK61CM-106	E CAPACITOR	10μF,16V
	C7	QEK61AM-476	E CAPACITOR	47μF,10V
	C8	QEK61AM-476	E CAPACITOR	47μF,10V
	C101	QETC1HM-474	E CAPACITOR	0.47μF,50V
	C102	QCYA1EK-104	CAPACITOR	0.1μF,25V
	C103	QETC0JM-476	E CAPACITOR	47μF,6.3V
	C104	QENC1HM-474	NP E CAPACITOR	0.47μF,50V
	C105	QEP61HM-105	NP E CAPACITOR	1μF,50V
	C106	QEK61HM-105	E CAPACITOR	1μF,50V
	C107	QETC1CM-476	E CAPACITOR	47μF,16V
	C108	QCFA1HZ-103	CAPACITOR	0.01μF,50V
	C109	QETC0JM-477	E CAPACITOR	470μF,6.3V
	C110	QETC0JM-108	E CAPACITOR	1000μF,6.3V
	C111	QETC1AM-476	E CAPACITOR	47μF,10V
	C112	QETC1CM-476	E CAPACITOR	47μF,16V
	C113	QCFA1HZ-103	CAPACITOR	0.01μF,50V
	L13	QRSA08J-0R0Y	RESISTOR	0Ω,1/10W
	L15	QRSA08J-0R0Y	RESISTOR	0Ω,1/10W
	L16	QRSA08J-0R0Y	RESISTOR	0Ω,1/10W
	L17	QRSA08J-0R0Y	RESISTOR	0Ω,1/10W
	L18	QRSA08J-0R0Y	RESISTOR	0Ω,1/10W
	L20	QRSA08J-0R0Y	RESISTOR	0Ω,1/10W
	L21	QRSA08J-0R0Y	RESISTOR	0Ω,1/10W
	L22	QRSA08J-0R0Y	RESISTOR	0Ω,1/10W
	L101	PU48530-101K	COIL	100μH
	L102	PU48530-101K	COIL	100μH
	L103	PU48530-101K	COIL	100μH
	EQ101	PELN0877	EQUALIZER	
	SW1	PU57908	SLIDE SWITCH,AV2/DECODE	
	ETH1	PQ46090	EARTH PLATE,TERM BOARD	
	SCW1	SDSF3008Z	SCREW,X4 PERI CONNECTOR	
	SCW2	SDSF3008Z	SCREW,BOARD	
	TB1	PQ21697D	TERMINAL BOARD ASSEMBLY,J315E	
		PQ21697G	TERMINAL BOARD ASSEMBLY,J315EG	
	JA701	PEMC1019	RGB21PIN SOCKET,AV1 IN/OUT	
	JA702	PEMC1019	RGB21PIN SOCKET,AV2/DECODE	
	CN712	PEMC0970-215	B TO B CONNECTOR,(1-15)MAIN	
	CN713	PEMC0970-209	B TO B CONNECTOR,(1-9)MAIN	

– TERMINAL BOARD ASSY(HR-J318E) –

	PWBA1	PB10841C-01	TERMINAL BOARD ASSEMBLY
	IC1	BU4052BC	IC
		or XRU4052BC	IC
	IC2	BA15218N	IC
		or XRA15218N	IC
	IC101	LVA523SA	IC
		or LVA523S	IC
	Q101	2SA933S(RS)	TRANSISTOR
		or 2SA1267(YG)JK	TRANSISTOR
	Q102	2SA933S(RS)	TRANSISTOR
		or 2SA1267(YG)JK	TRANSISTOR
	Q103	2SC1740S(RS)	TRANSISTOR
		or 2SC3199(GB)-TJK	TRANSISTOR
		or 2SC536SPA(FG)	TRANSISTOR
		or 2SC3311A(RS)	TRANSISTOR
	R5	QRSA08J-102YN	RESISTOR 1kΩ,1/10W
	R6	QRSA08J-102YN	RESISTOR 1kΩ,1/10W
	R10	QRSA08J-183YN	RESISTOR 18kΩ,1/10W

#⚠	REF No.	PART No.	PART NAME, DESCRIPTION	
	R12	QRSA08J-682YN	RESISTOR	6.8kΩ,1/10W
	R14	QRSA08J-682YN	RESISTOR	6.8kΩ,1/10W
	R15	QRSA08J-473YN	RESISTOR	47kΩ,1/10W
	R18	QRSA08J-682YN	RESISTOR	6.8kΩ,1/10W
	R20	QRSA08J-183YN	RESISTOR	18kΩ,1/10W
	R22	QRSA08J-105YN	RESISTOR	1MΩ,1/10W
	R23	QRSA08J-183YN	RESISTOR	18kΩ,1/10W
	R101	QRD121J-391S	RESISTOR	390Ω,1/2W
	R102	QRSA08J-153YN	RESISTOR	15kΩ,1/10W
	R103	QRSA08J-103YN	RESISTOR	10kΩ,1/10W
	R104	QRSA08J-102YN	RESISTOR	1kΩ,1/10W
	R105	QRSA08J-102YN	RESISTOR	1kΩ,1/10W
	R106	QRSA08J-102YN	RESISTOR	1kΩ,1/10W
	R107	QRSA08J-152YN	RESISTOR	1.5kΩ,1/10W
	R108	QRSA08J-750YN	RESISTOR	75Ω,1/10W
	R109	QRSA08J-750YN	RESISTOR	75Ω,1/10W
	C5	QETC1EM-476	E CAPACITOR	47μF,25V
	C6	QETC0JM-476	E CAPACITOR	47μF,6.3V
	C101	QETC0JM-108	E CAPACITOR	1000μF,6.3V
	C102	QETC1CM-476	E CAPACITOR	47μF,16V
	C103	QCFA1HZ-103	CAPACITOR	0.01μF,50V
	C104	QETC1HM-105	E CAPACITOR	1μF,50V
	C105	QCFA1HZ-103	CAPACITOR	0.01μF,50V
	C106	QETC0JM-476	E CAPACITOR	47μF,6.3V
	C108	QETC1HM-105	E CAPACITOR	1μF,50V
	C110	QCFA1HZ-103	CAPACITOR	0.01μF,50V
	C111	QETC1AM-476	E CAPACITOR	47μF,10V
	L101	PU48530-101K	COIL	100μH
	L102	PU48530-101K	COIL	100μH
	EQ101	PELN0742	EQUALIZER	
	ETH1	PQ46090	EARTH PLATE,TERM BOARD ASSY	
	SCW1	SDSF3008Z	SCREW,X2 TERMINAL BOARD ASSY	
	TB1	PQ21697C	TERINAL BOARD ASSEMBLY	
	JA701	PEMC1019	RGB21PIN SOCKET,PERI-1	
	CN711	PEMC0970-205	B TO B CONNECTOR,(1-5) MAIN	
	CN712	PEMC0970-215	B TO B CONNECTOR,(1-15) MAIN	
	CN713	PEMC0970-209	B TO B CONNECTOR,(1-9) MAIN	

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AUDIO/CONTROL HEAD BOARD ASSY <12>

	PWBA6	PB10819A6-02	AUDIO CONTROL HEAR BOARD ASSY
	CN1	PU60910-107	WIRE TRAP,(1-7) MAIN

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FRONT BOARD ASSEMBLY <28>

	PWBA1	PB10825D-01	FRONT BOARD ASSEMBLY,J315EG
		PB10825B-01	FRONT BOARD ASSEMBLY,J315E
		PB10825A-01	FRONT BOARD ASSEMBLY,J318E
⚠	IC1	UPD16311GC(K)	IC
⚠		or UPD16311GC(E)	IC
	IC2	GP1U581X	IR DETECT UNIT
		or HC-377J	IR DETECT UNIT

#⚠ REF No.	PART No.	PART NAME, DESCRIPTION	
D1	1SS132Y	DIODE	
D2	1SS132Y	DIODE	
D3	1SS132Y	DIODE	
D4	1SS132Y	DIODE	
D5	1SS132Y	DIODE	
D6	1SS132Y	DIODE	
D8	1SS132Y	DIODE,J315E J315EG	
D10	1SS132Y	DIODE,VCR PLUS	
D11	RD4.7ES-T1B2	ZENER DIODE	
D12	SLC-22VR3F	LE DIODE	
D13	SLH-34MC3F	LE DIODE	
D17	1SS132Y	DIODE	
D21	1SS132Y	DIODE	
D22	1SS132Y	DIODE	
D26	1SS132Y	DIODE	
D28	1SS132Y	DIODE	
D31	11ES2	DIODE	
D35	1SS133	DIODE,J315E J315EG	
D36	1SS133	DIODE,J315E J315EG	
R1	QRD161J-333	RESISTOR	33kΩ,1/6W
R2	QRD161J-333	RESISTOR	33kΩ,1/6W
R3	QRD161J-333	RESISTOR	33kΩ,1/6W
R4	QRD161J-333	RESISTOR	33kΩ,1/6W
R5	QRD161J-472	RESISTOR	4.7kΩ,1/6W
R6	QRD161J-472	RESISTOR	4.7kΩ,1/6W
R7	QRD161J-102	RESISTOR	1kΩ,1/6W
R8	QRD161J-333	RESISTOR	33kΩ,1/6W
R9	QRD161J-103	RESISTOR	10kΩ,1/6W
R10	QRD161J-103	RESISTOR	10kΩ,1/6W
R11	QRD161J-331	RESISTOR	330Ω,1/6W
R12	QRD161J-331	RESISTOR	330Ω,1/6W
R13	QRD161J-333	RESISTOR,J318E	33kΩ,1/6W
R15	QRD161J-103	RESISTOR,J318E	10kΩ,1/6W
R16	QRD161J-151	RESISTOR,J318E	150Ω,1/6W
R17	QRD161J-750	RESISTOR,J318E	75Ω,1/6W
RA1	QRB045J-333XF	RESISTOR ARRAY	33kΩ,4W
C1	QERF0JM-336	E CAPACITOR	33μF,6.3V
C2	QCVB1CN-103	CAPACITOR	0.01μF,16V
C3	QERF1HM-106	E CAPACITOR	10μF,50V
C4	QCSB1HJ-330	CAPACITOR	33pF,50V
C5	QCSB1HJ-330	CAPACITOR	33pF,50V
C6	QETF0JM-227	E CAPACITOR	220μF,6.3V
C7	QCVB1CN-103	CAPACITOR,J318E	0.01μF,16V
L1	PU48530-101J	COIL	100μH
S1	PESW0525-02Z	TACT SWITCH,CH+(S9/S21)	
S2	PESW0525-02Z	TACT SWITCH,CH-(S10)	
S3	PESW0525-02Z	TACT SWITCH,OPERATE	
S4	PESW0525-02Z	TACT SWITCH,TIMER	
S7	PESW0525-02Z	TACT SWITCH,PLAY	
S8	PESW0525-02Z	TACT SWITCH,STOP/EJECT	
S10	PESW0525-02Z	TACT SWITCH,O.P.I.(S13	
S11	PESW0525-02Z	TACT SWITCH,REC/ITR	
S12	PESW0525-02Z	TACT SWITCH,PAUSE	
S14	PESW0525-02Z	TACT SWITCH,S.HQ(S10)	
S15A	PESW0525-02Z	TACT SWITCH,CH SEARCH	
S16A	PESW0525-02Z	TACT SWITCH,STORE	
S17	PESW0525-02Z	TACT SWITCH,P/M(S19)	
S18	PESW0525-02Z	TACT SWITCH,DISP(S22)	
S21	PESW0525-02Z	TACT SWITCH,C.RES(S23)	
FDP1	PEDP0098-04	FLUORESCENT DISPLAY PANEL	
HD1	PQM30038-6	LED HOLDER,D12	
HD2	PQM30038-2-2	LED HOLDER,D13	
HD3	PQ34951	FDP HOLDER(L)	
HD4	PQ34952	FDP HOLDER(R)	
JA1	PEMC1076	PIN JACK,AUDIO IN J318E	
JA2	PEMC1076	PIN JACK,VIDEO IN J318E	
CN1	PEMC0915-109	FFC CONNECTOR,(1-9) MAIN	
CN2	PEMC0915-109	FFC CONNECTOR,(1-9) MAIN J318E	

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PRE/REC AMP BOARD ASSEMBLY <43>

PWBA1	PB10834A2	PRE/REC BOARD ASSEMBLY	
IC501	AN3389SBNS	IC	
IC581	TEA5750	IC	
Q503	2SC4081(QRS)	TRANSISTOR	
Q504	2SC4081(QRS)	TRANSISTOR	
Q505	2SA1576(QRS)	TRANSISTOR	
Q506	2SC4081(QRS)	TRANSISTOR	
Q581	DTC124EU	CHIP D TRANSISTOR	
D502	1SS133	DIODE	
D505	1SS133	DIODE	
R501	QRSA08J-622YN	RESISTOR	6.2kΩ,1/10W
R510	QRSA08J-222YN	RESISTOR	2.2kΩ,1/10W
R511	QRSA08J-392YN	RESISTOR	3.9kΩ,1/10W
R514	QRSA08J-681YN	RESISTOR	680Ω,1/10W
R515	QRSA08J-102YN	RESISTOR	1kΩ,1/10W
R516	QRSA08J-681YN	RESISTOR	680Ω,1/10W
R517	QRSA08J-562YN	RESISTOR	5.6kΩ,1/10W
R518	QRSA08J-562YN	RESISTOR	5.6kΩ,1/10W
R519	QRSA08J-391YN	RESISTOR	390Ω,1/10W
R520	QRSA08J-391YN	RESISTOR	390Ω,1/10W
R521	QRSA08J-162YN	RESISTOR	1.6kΩ,1/10W
R526	QRSA08J-122YN	RESISTOR	1.2kΩ,1/10W
R531	QRSA08J-102YN	RESISTOR	1kΩ,1/10W
R532	QRSA08J-222YN	RESISTOR	2.2kΩ,1/10W
R536	NRVA62D-303N	RESISTOR	30kΩ,1/16W
R539	QRD161J-334	RESISTOR	330kΩ,1/6W
R541	QRSA08J-271YN	RESISTOR	270Ω,1/10W
R542	QRSA08J-271YN	RESISTOR	270Ω,1/10W
R543	QRSA08J-301YN	RESISTOR	300Ω,1/10W
R546	QRD161J-0R0	RESISTOR	0Ω,1/6W
R551	QRSA08J-334YN	RESISTOR	330kΩ,1/10W
R581	NRVA62D-112N	RESISTOR	1.1kΩ,1/16W
R582	NRVA62D-102N	RESISTOR	1kΩ,1/16W
R584	QRD161J-331	RESISTOR	330Ω,1/6W
R588	QRSA08J-122YN	RESISTOR	1.2kΩ,1/10W
R589	QRSA08J-471YN	RESISTOR	470Ω,1/10W
R590	QRSA08J-182YN	RESISTOR	1.8kΩ,1/10W
C504	QCFA1HZ-103	CAPACITOR	0.01μF,50V
C505	QCFA1HZ-103	CAPACITOR	0.01μF,50V
C506	QCFA1HZ-103	CAPACITOR	0.01μF,50V
C507	QCSA1HJ-331	CAPACITOR	330pF,50V
C510	QCSA1HJ-150	CAPACITOR	15pF,50V
C516	QCC11CJ-104	CAPACITOR	0.1μF,16V
C517	QCFA1HZ-103	CAPACITOR	0.01μF,50V
C518	QCSA1HJ-391	CAPACITOR	390pF,50V
C521	QCFA1HZ-103	CAPACITOR	0.01μF,50V
C522	QFV11HJ-104	F CAPACITOR	0.1μF,50V
C523	QCYA1HK-333	CAPACITOR	0.033μF,50V

#⚠	REF No.	PART No.	PART NAME, DESCRIPTION	
	C524	QCSA1HJ-680	CAPACITOR	68pF,50V
	C525	QCSA1HJ-560	CAPACITOR	56pF,50V
	C526	QCYA1HK-333	CAPACITOR	0.033μF,50V
	C527	QCFA1HZ-103	CAPACITOR	0.01μF,50V
	C528	QCFA1HZ-103	CAPACITOR	0.01μF,50V
	C529	QCYA1HK-333	CAPACITOR	0.033μF,50V
	C530	QCSA1HJ-680	CAPACITOR	68pF,50V
	C531	QCFA1HZ-103	CAPACITOR	0.01μF,50V
	C533	QFV11HJ-104	F CAPACITOR	0.1μF,50V
	C534	QCFA1HZ-103	CAPACITOR	0.01μF,50V
	C536	QER61CM-476	E CAPACITOR	47μF,16V
	C540	QCSA1HJ-560	CAPACITOR	56pF,50V
	C549	QCYA1EK-104	CAPACITOR	0.1μF,25V
	C556	QCSA1HJ-2R0	CAPACITOR	2pF,50V
	C581	QER61HM-105	E CAPACITOR	1μF,50V
	C582	QCSA1HJ-820	CAPACITOR	82pF,50V
	C583	QCYA1HK-473	CAPACITOR	0.047μF,50V
	C584	QCFA1HZ-103	CAPACITOR	0.01μF,50V
	C585	QCSA1HJ-220	CAPACITOR	22pF,50V
	C586	QCFA1HZ-103	CAPACITOR	0.01μF,50V
	C587	QCSA1HJ-470	CAPACITOR	47pF,50V
	C588	QCFA1HZ-103	CAPACITOR	0.01μF,50V
	C589	QCSA1HJ-101	CAPACITOR	100pF,50V
	C590	QCSA1HJ-471	CAPACITOR	470pF,50V
	C591	QER60JM-476	E CAPACITOR	47μF,6.3V
	C593	QCSA1HJ-390	CAPACITOR	39pF,50V
	C595	QCSA1HJ-330	CAPACITOR	33pF,50V
	L501	PU48530-470J	COIL	47μH
	L503	PU48530-101J	COIL	100μH
	L504	PU59152-121J	COIL	120μH
	L506	PU59152-820J	COIL	82μH
	L581	PU59152-121J	COIL	120μH
	L582	PU59152-470J	COIL	47μH
	L583	PU48530-470J	COIL	47μH
	BKT1	PQ21512	S.FRAME(PRE.)	
	CN501	PEMC1056-119	B TO B CONNECTOR,(1-19) MAIN	
	CN502	PEMC1004-006	CONNECTOR,(1-6) UPPER DRUM	

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DECK TERMINAL BOARD ASSEMBLY <51>

	PWBA1	PB10819A1-02	DECK TERMINAL BOARD ASSEMBLY	
⚠	IC1	BA6418N	IC	
⚠		or XRA6418N	IC	
	Q2	PT491F	END SENSOR	
	D1	SIR-381SB3FM	LE DIODE	
	D2	RD6.2ESB2	ZENER DIODE	
	R1	QRD162J-102	RESISTOR	1kΩ,1/6W
	R3	QRD162J-331	RESISTOR	330Ω,1/6W
	R4	QRD162J-820	RESISTOR	82Ω,1/6W
	R6	QRD162J-331	RESISTOR	330Ω,1/6W
	R7	QRD162J-332	RESISTOR	3.3kΩ,1/6W
	C1	QCVB1CM-103	CAPACITOR	0.01μF,16V
	C3	QETA1CM-227	E CAPACITOR	220μF,16V
	PS1	PS5705HR	PH INTERRUPTER	
	PS2	PS5705HR	PH INTERRUPTER	
	WR1	PEWR0728-01-01	PARALLEL WIRE	
	CN1	PEMC0915-018	FFC CONNECTOR,(1-18) MAIN	

#⚠	REF No.	PART No.	PART NAME, DESCRIPTION	
	CN2	PU60642	7PIN CONNECTOR,(1-7) CAP MDA	
	CN3	PU60640	4PIN CONNECTOR,(1-4) CASS.HOUSING	
	CN5	PU60910-2	CONNECTOR,(1-2) DECK TERMINAL	

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CASSETTE HOUSING BOARD <56>

	PWBA3	PB10819A3-02	CASSETTE HOUSING ASSEMBLY	
	Q2	PN268VI	PHOTO TRANSISTOR	
	C1	QCVB1CM-103	CAPACITOR	0.01μF,16V
	S1	PESW0589	PUSH SWITCH	
	CN2	PU60639	4PIN SOCKET,(1-4)DECK TERMINA	

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PDC BOARD ASSEMBLY(HR-J318E ONLY) <70>

	PWBA1	PB20653A-01	PDC BOARD ASSEMBLY	
	IC1	MV1820E	IC	
		or MV1820F	IC	
	R2	QRD161J-472	RESISTOR	4.7kΩ,1/6W
	R3	QRD161J-221	RESISTOR	220Ω,1/6W
	R4	QRD161J-221	RESISTOR	220Ω,1/6W
	C1	QCT30CH-160	CAPACITOR	16pF
	C2	QCT30CH-160	CAPACITOR	16pF
	C3	QCC11CJ-104	CAPACITOR	0.1μF,16V
	C4	QCVB1CN-103	CAPACITOR	0.01μF,16V
	C5	QCVB1CN-103	CAPACITOR	0.01μF,16V
	C6	QCVB1CN-103	CAPACITOR	0.01μF,16V
	C7	QCC11CJ-473	CAPACITOR	0.047μF,16V
	C8	QCVB1CN-103	CAPACITOR	0.01μF,16V
	C9	QETC1CM-476	E CAPACITOR	47μF,16V
	L1	PU48530-100J	COIL	10μH
	LC201	PU60950-101GZ	N FILTER	
	LC202	PU59736-103	N FILTER	
	LC203	PU60950-101GZ	N FILTER	
	LC205	PU60950-101GZ	N FILTER	
⚠	X1	PEVB0480	CRYSTAL RESONATOR	
	SLD1	PU61069-1-2	SHIELD CASE	
	SLD2	PU61070	SHIELD COVER	
	SLD3	PU61071	SHIELD PLATE	
	CN1	PU60910-106	WIRE TRAP,(1-7) MAIN	

SECTION 6
TECHNICAL INFORMATION

6.1 SYSCON CIRCUIT

6.1.1 Syscon CPU pin function (IC601) 1/2

PIN NO.	LABEL	IN/OUT	NOTE
1	P.DOWN	IN	POWER DOWN DETECT(POWER DOWN:H → L)
2	SYNC DET	IN	SYNC DETECT (NO SYNC:H)
3	LOCK DET	IN	TUNING LOCK CHECK
4	AVGFM	IN	AUTO TRACKING DATA(AVERAGE VOLTAGE OF PB FM LEVEL) INPUT
5	AVSS	-	GND
6	TEST	-	GND
7	X2	-	MAIN SYSTEM CLOCK(10MHz)
8	X1	-	MAIN SYSTEM CLOCK(10MHz)
9	VSS	-	GND
10	OSC1	IN	SUB SYSTEM CLOCK
11	OSC2	OUT	SUB SYSTEM CLOCK
12	RESET	IN	RESET AT CONNECT VCR TO AC
13	(NMI)	-	NC
14	TU CTL	OUT	TUNER MODE:H
15	PLL DATA	OUT	TUNING CONTROL SERIAL DATA OUTPUT
16	V.MUTE	OUT	VIDEO MUTE CONTROL(MUTE ON:H)
17	PLL CLK	OUT	TUNING DATA TRANSFER CLOCK
18	M.CE	OUT	MOMORY IC CHIP ENABLE
19	F.DATA	IN/OUT	MEMORY IC DATA
20	P.MUTE	OUT	PICTURE MUTE CONTROL(MUTE ON:L)
21	RAE OUT	-	NC
22	TU FG	IN	TAKE-UP REEL ROTATION DET/TAPE REMAIN
23	SUP FG	IN	SUPPLY REEL ROTATION DET/TAPE REMAIN
24	DAV	IN	VPS TRANSMITION SIGNAL
25	CASS	IN	CASSETTE SENSOR (SENSOR ON:L)
26	LSA	IN	MECHANISM MODE DETECT
27	LSB	IN	MECHANISM MODE DETECT
28	REC SF	IN	REC SAFETY SW DETECT (SW ON:L)
29	END SENS	IN	TRAILER TAPE DETECT(DETECT ON:L)
30	CAP REV	OUT	CAPSTAN MOTOR CONTROL (FWD:H/REV:L)
31	H SEL	OUT	HEAD SELECT CONTROL(SP:L/LP:M/EP:H)
32	A/M/S	OUT	PRE/REC CIRCUIT CONTROL(AUTO:M/MANUAL:H/S&S:L)
33	REC ST	OUT	REC START:H
34	REC	OUT	REC MODE:H
35	LCM1	OUT	LOADING MOTOR DRIVE(1)
36	LCM2	OUT	LOADING MOTOR DRIVE(2)
37	LP SPEC	OUT	LP SPECIAL PB MODE:H
38	P.CTL	OUT	POWER CONTROL(POWER ON:H)
39	V-UP	OUT	MOTOR DRIVE VOLTAGE SELECT (M17V:H)
40	PB(H)/PB(L)	IN	PB MODE:H(RF CONV ON/OFF CONTROL)

Table 6-1-1 SYSCON CPU pin function (1/2)

6.1.2 Syscon CPU pin function (IC601) 2/2

PIN NO.	LABEL	IN/OUT	NOTE
41	STL	IN	SHUTTLE SWITCH
42	VP SDA	OUT	VPS SERIAL DATA OUTPUT(FOR PROGRAMING CONTROL)
43	VP SCL	OUT	VPS DATA TRANSFER CLOCK
44	YNR CTL	OUT	PICTURE CONTROL(YNR CTL:L)
45	VPCTL	OUT	V.PULSE ADDITION TIMING CONTROL
46	SLE CTL	OUT	SP/LP/EP MODE CONTROL
47	PROTECT	IN	POWER PROTECT DETECT(POWER OFF:L)
48	EE	OUT	EE MODE:L
49	PB SPCL	OUT	SPECIAL PB MODE:L
50	RC IN	IN	REMOTE CONTROL DATA INPUT
51	CCIR	OUT	CCIR:L
52	CTL C/D	IN	CTL PULSE INPUT(MODE DETECT/BLANK PORTION DET)
53	SHQ ON	OUT	SUPPER QUALITY SWITCH
54	AV2/CH+	IN	AV2 SELECT SWITCH
55	SERVO	OUT	CAPSTAN MOTOR CONTROL(SERVO:L/MECHACON:H)
56	PAUSE	OUT	CAPSTAN MOTOR CONTROL(PAUSE:L)
57	S-OUT	OUT	ON SCREEN CONTROL DATA
58	S-IN	IN	ON SCREEN /FDP CONTROL DATA
59	S-CLK	OUT	DATA TRANSFER CLOCK
60	SERVO DATA	OUT	SERVO IC CONTROL DATA
61	STB	OUT	CLOCK OUTPUT PERMISSION
62	SERVO CLK	OUT	DATA TRANSFER CLOCK
63	VCC	-	SYSTEM POWER
64	A.MUTE	OUT	AUDIO MUTE CONTROL(MUTE ON:H)
65	DUTY I/O	IN/OUT	IN/OUT INDEX DATA CONTROL
66	FRONT	OUT	FRONT INPUT:H
67	CTL CLOCK	IN	INDEX CONTROL
68	PERI 2	OUT	PERI-2 CONNECTOR SELECT
69	CAP FG	IN	TAPE SPEED DETECT/BACK SPACE COUNT
70	CH DATA	OUT	IIL LOGIC CTL DATA
71	D.FF	IN	DRUM ROTATION DETECT/REC TIMING CONTROL
72	AVCC	-	SYSTEM POWER(for ANALOG)
73	PAUSE IN	IN	PAUSE CONTROL(PAUSE ON:L)
74	SCR	IN	NC
75	DRUM V	OUT	DRUM MOTOR CONTROL
76	CAP V	OUT	CAPSTAN MOTOR CONTROL
77	D.V.DET	IN	DRUM DRIVE VOLTAGE DETECT
78	JSA	IN	JOG PULSE INPUT(A)
79	JSB	IN	JOG PULSE INPUT(B)
80	START SENS.	IN	LEADER TAPE DETECT(DETECT ON:L)

Table 6-1-2 SYSCON CPU pin function (2/2)

[redacted]

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